Etching, engraving and the other methods of printing pictures

Hans Wolfgang Singer, William Strang

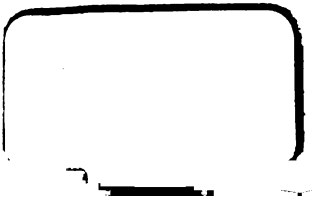
Digitized by Google

HARVARD COLLEGE
LIBRARY

FROM THE BEQUEST OF
CHARLES SUMNER
CLASS OF 1830
Senator from Massachusetts

FOR BOOKS RELATING TO
POLITICS AND FINE ARTS

TRANSFERRED TO
FINE ARTS LIBRARY



Digitized by Google

From the
Fine Arts Library
Fogg Art Museum
Harvard University

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

METHODS
OF
PRINTING PICTURES

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

ETCHING, ENGRAVING

AND THE OTHER METHODS OF

PRINTING PICTURES

BY

HANS W. SINGER &

WILLIAM STRANG

WITH TEN ORIGINAL PLATES BY, AND
FOUR ILLUSTRATIONS AFTER, WILLIAM STRANG

LONDON
KEGAN PAUL, TRENCH, TRÜBNER & CO. LTD.
PATERNOSTER HOUSE, CHARING CROSS ROAD
1897

Digitized by Google

Transferred from
~~FA 5738.1~~
~~D27~~
~~Si64~~

fA 6035.14 B copy

Transferred by Business School Library
to Harvard College Library

HARVARD COLLEGE
JAN 21 1898
LIBRARY.

Sumner fund.

TRANSFERRED TO
FINE ARTS LIBRARY
Mar 10, 1964

5719
Si6
c. 2

(*The rights of translation and of reproduction are reserved*)

Digitized by Google

PREFACE

THE nature of this book is very simple and practical. It is intended as a guide to the enjoyment of an art which has not yet succeeded in engaging public interest to the extent that it deserves. With the exception, perhaps, of the theoretical chapter, in which an attempt has been made to proceed beyond the explanation of the process to the elucidation of the principle, all subjects treated are matters of fact, and there is hardly any occasion for prefatory remarks.

But there is one thing that I should like to say here at the beginning, as it has been said at the end. The book is virtually one on an art topic. Yet it contains a chapter on 'process' work. Process work of all kinds, however, has nothing to do with art, and the Author has not intended to sanction the leniency of the general public, which bestows the honourable title of Art on every kind of picture, even on heliogravures.

Digitized by Google

If explanations on 'processes' have been included within these covers, these have been given less with a view towards interesting the reader in them, than towards enabling him to distinguish them from real graphic art.

Without resorting to 'process' reproductions, the student of Black and White art, to the study of which this book is a guide, need not lack opportunity of making himself acquainted with original work in all its various branches. In England both Universities possess excellent collections; there is a smaller one at South Kensington, and a splendid one at the British Museum. Fortunately, too, for the enquirer, the Department of Prints is more accessible than the Reading Room, since the former dispenses with some of the formalities so strictly observed in the latter; the collections are all well-arranged, and any desired print is readily found.

The British Museum Print Room, as would naturally be expected, is strong in English mezzotints and English work generally, and of late careful additions have been made to the Italian prints. Generally speaking, every school and every century is fairly well represented; but, unfortunately, there is an unwritten law which prevents the keeper from buying prints by living artists. This law is strictly observed, with the result that complete collections of the best modern masters in Black and White will be impossible, and those examples which may

Digitized by Google

be purchased after the death of the artists will have to be acquired at double or treble their original value.

On the other side of the Channel we find a collection, equal in importance to that of the British Museum, in the Bibliothèque Nationale; but as far as arrangement and convenience of the public are concerned, it will not be found nearly as serviceable as that in London. There are many other fine collections in Paris, notably that of Baron E. Rothschild—one of the best in the world for early engravings—but this, unfortunately, is very difficult of access.

At Berlin we find a comparatively new but very large collection. If its growth has been rapid, quality has not been sacrificed to quantity, for the means at the disposal of the directors have been large, and growth could go on quickly. Dürer is well represented; and amongst many other specialties, we may note the French illustrated books of the last century. Accommodation for students is good, and the elaborate catalogues will be found very useful to those allowed to handle them.

At Amsterdam we find the largest existing collection of the works of that superb fifteenth-century High German engraver, the so-called Master of the Amsterdam Cabinet. Very little else, except examples of the Dutch masters, is to be found here, but under the new director the collection promises to become perfect in its own way.

Digitized by Google

Dresden has perhaps the largest and best-arranged collection of engravings by German masters of the fifteenth century; it contains also a quantity of French eighteenth-century work. Nowhere can Seghers and Leblon be seen as well as here. The managers of the Dresden Print Room make a point also of collecting modern work as soon as it appears, and thus the Institution becomes one of living interest to the public. There is another collection in Dresden formed by the late King Frederic August II. This is also open to the public, and in many respects complements the collection in the Royal Print Room.

Vienna owns the two great collections used by Bartsch for his important 'Le peintre-graveur,' but these have not been brought up to date as regards arrangement. Here, as in Munich, want of means has prevented additions on a large scale to the fine original stock, and has also effectually hindered it from becoming serviceable in the way that it should have done. On the other side of the Alps, Print Rooms are not important; and what there are, are almost invariably wretchedly managed.

We have mentioned only a few of the most important places where prints may be seen and studied. Almost every town which can boast a picture gallery, at least north of the Alps, has a department of Prints and Drawings; and visitors in search of the

Digitized by Google

curious and interesting would be well repaid by a visit to them.

But, after all, to evoke and further the study of Black and White art is only a secondary aim of our book. What we chiefly desire is to excite a love of prints; and if we should succeed in inducing one man to start even a small collection of his own, we shall be better satisfied than to have caused a hundred to visit the Print Rooms.

Digitized by Google

Digitized by Google

CONTENTS

PAGE

INTRODUCTION 1

CHAPTER I

THE THREE DIFFERENT KINDS OF PRINTED PICTURES . 7

CHAPTER II

THE RELIEF PROCESSES

The process of black-line woodcutting—Of chiaroscuros—Of white-line woodcutting—Of inking and printing blocks—Of making corrections—Development of the black-line woodcut—An economical art—Causes for its failings—Dürer—Localising prints—Paper and water-marks—State and quality of an impression—The style of black-line wood-cutting — Development of chiaroscuros—Development of white-line work—Dotted prints—Modern white-line work — Its advantages and its weakness — Lepère and Vallotton 9

CHAPTERS III–XI

THE INTAGLIO PROCESSES 26

CHAPTER III

LINE-, OR BURIN-ENGRAVING

The process of engraving upon copper—Transferring designs upon the plate—Inking and printing the plate—Origin and development of the art of line engraving—Nielli—Earliest stages of true line engravings—Mantegna and the Master of the Playing Cards—

Digitized by Google

PAGE

Straight cross-hatching—Curvilinear cross-hatching—On signatures—On margins—On states—Later stages of line engraving and the development of the 'colour' style—Goltzius and the portrait engravers of Louis XIV.—Mellan's system and Morin—The decadence—Outline engraving—The cartoon style—Steel engraving—The supremacy of the 'lozenge'—Modern revival of the art by Stauffer in Germany and Gaillard in France—Steel-facing—The push burin—Intaglio prints compared with relief prints 26

CHAPTER IV

ETCHING

The process of etching—Improvements of the process and modern methods—Positive processes—Early etchings—Augustin Hirschvogel and suggestiveness—Tonality and 'stopping out'—Methods devised to avoid stopping out—Proving an etched plate—Callot—Some special methods of etching—Etching process compared with engraving—Etching the favourite medium of original artists—Because they can best throw their whole personality into it—Rembrandt van Rijn 65

CHAPTER V

DRY POINT

The process of dry point—The burr—Old dry point used without the burr—Dry point as accessory to etching—Used as a distinct method of its own—Helleu 79

CHAPTER VI

MEZZOTINT ENGRAVING

Line methods and surface methods—The process of mezzotinting—Its artistic qualities and advantages—Origin of the art—Highest stage during the last century in England—The continental era—Modern mezzotinting 83

Digitized by Google

CHAPTER VII

PAGE

AQUATINTING

Applying acid direct with a brush—Sulphur tone—The processes of aquatinting—Leprince's dust-box—Stapart's sea-salt ground—The modern resin solutions—Sand-paper aquatinting—Biting through an aquatint ground—The drawbacks of the method and how to reduce them—The application of aquatinting—Aquatinting as an original art in the hands of Goya—Aquatint tones produced without the use of a mordant 91

CHAPTER VIII

THE CRAYON METHOD AND ITS DEVELOPMENTS

Process and tools of crayon engraving—Its inventor François—Meynier and his new implements—The roulette and old roulette work—Boissieu—Pastel engraving and Bonnet 96

CHAPTER IX

STIPPLING

Early dotted, not stippled, plates—The process of stippling—Well adapted to the reproduction of delicate painting—The art of stippling and Angelica Kauffmann—Bylaert and Bartolozzi . . 101

CHAPTER X

SOME STRAY METHODS OF ENGRAVING

Hammered (puncheon) prints—Done at first by goldsmiths—The negative prints—Lutma's hammered prints—Soft ground etching—Dietrich Meyer—Rops—Tischbein's method—Monotypes . 105

CHAPTER XI

COLOUR PRINTING

Colour printing as applied to woodcuts—As applied to engravings—Earliest attempts, Schenk and Seghers—The system of using one plate for all colours—The system of using one plate for each colour—The three-colour method, J. C. Leblon—Ploos van Amstel 112

Digitized by Google

CHAPTER XII

PAGE

THE PLANOGRAPHIC PROCESS LITHOGRAPHY

The process of lithography—Etching the stone—Inking the stone—The lithographic press — Crayon method — Pen-drawing method—Engraving on stone—Splatter work—Scraped lithography—Transfer papers—Chromolithography—Iris plates—Invention of lithography, Senefelder—Popularity of lithography with artists—Its rise and fall—Some fine lithographic artists 121

CHAPTER XIII

HOW TO DISTINGUISH BETWEEN DIFFERENT KINDS OF PRINTS

Outward marks of distinction—Principal means of distinction based on the analysis of the line—Distinctive marks of the surface methods 132

CHAPTER XIV

HOW TO APPRECIATE AND ENJOY PRINTS

Art a matter of knowledge rather than of taste—Subordination to the student's opinion an advantageous course for the general public—Different art theories compared and criticised—Idealism—Naturalism — Decorative art — A physio-psychological theory — The author's theory—The theory applied to the graphic arts—Line the basis of graphic art—Injunctions to the public with regard to black and white pictures 139

CHAPTER XV

MODERN PHOTO-MECHANICAL PROCESSES

Substitute processes — Chemical — Electric — Mechanical — Photographical—The different types of the last named—Zincography—Half-tone reproductions and the screen—Three-colour prints by means of the screen process—Collotypes—Heliogravures—Photogravures—The photo-mechanical processes in rank far below the artistic processes. 164

CHAPTER XVI

BIBLIOGRAPHY 188

INDEX 223

Digitized by Google

LIST OF ILLUSTRATIONS.*

No.		
I.	SOFT-GROUND ETCHING (*see p.* 108) . . .	*Frontispiece*
II.	WOODCUT	*to face p.* 10
III.	WOODCUT (WHITE LINE)	„ 22
IV.	ENGRAVING	„ 28
V.	ETCHING	„ 66
VI.	DRY POINT	„ 80
VII.	MEZZOTINT	„ 86
VIII.	SAND-PAPER MEZZOTINT	„ 94
IX.	LITHOGRAPH	„ 122
X.	LITHOGRAPH	„ 124
XI.	ZINC PROCESS	„ 168
XII.	HALF-TONE PROCESS	„ 172
XIII.	COLLOTYPE	„ 178
XIV.	PHOTOGRAVURE	„ 184

* All plates except [illegible]

Digitized by Google

Digitized by Google

ETCHING, ENGRAVING,

AND OTHER PROCESSES OF

PICTURE PRINTING

INTRODUCTION

AMONGST all the arts there is but one which has been fortunate enough to attain strong and lasting popularity with the general public; that is the art of painting. Most persons in their desire for the Beautiful are satisfied when they can recall to their mental vision the frescoes of Raphael or of Michael Angelo, the works of a Bellini, a Titian, or some other of those magical canvases which masters of the brush in all ages have left to delight our eyes. Some few carry their aspirations a little further, and to the enjoyment of painting add also an appreciation of the beauties of sculpture. There may be a few, surely a very few, capable of obtaining an æsthetic pleasure from architecture; but the training of the majority seldom carries them so far. If the representation in marble of abstract form and motion succeeds perhaps in evoking a little more than an antiquarian interest, architecture barely awakens the feeling that it is an art at all. There

1 °

Digitized by Google

are some persons who will occasionally look at a building, but it will be on account of its size, or the practical manner in which it is arranged, or because of its historical associations, not because they wish to carry away from it an impression of beauty such as they might receive from an oil-painting. An obvious reason for this want of popularity on the part of sculpture and architecture is that sculpture rarely tells a story and architecture never does so, while artists of the brush have cleverly adopted the expedient of story-telling as a means of attacking the public in a weak spot.

There is yet another branch of art which uses the same expedient of story-telling, and with a better right to it too, yet strangely enough it holds but an insignificant place in public esteem compared with painting. People like to look at a picture in black-and-white, but they do not rank printed pictures as high as painted ones—they do not, in fact, rank them as high as statues and buildings. Yet the chances of Black-and-White should be the best of all the arts, since it is by far the most widely spread. In spite of this, however, it is just the one form of art about which the least is known. Notwithstanding the many assertions that have been made to the contrary, there are even now numerous artists—and by artists I mean painters—who confuse etching with pen-and-ink drawing, and who are unable to tell one style of engraving from another. Even a specialist newspaper belonging to the printing trade quite recently spoke of Hokusai's delightful coloured prints as 'engravings on copper.'

We live in an age that revels in natural and sociological science. People know a great deal about geological evolution, and trichinæ, and the Australian ballot system,

Digitized by Google

and atavism, and numerous other things that nobody ever sees or cares about. But when you ask the same people to give an account of some of the productions of men, such as the black-and-white pictures they have daily before their eyes upon the walls or in books, you receive no answer. Of course, the reason of this is readily found. This branch of the Fine Arts needs explanation, while painting, for instance, does not. Almost everyone has at some time or other noticed a student copying an Old Master in a picture gallery, and has observed how he manipulates with his brush and colours. At the very least everyone has seen a house-painter or a man decorating the walls of a room. Virtually all proceed in like manner. Scarcely anyone, however, has seen a man engaged in producing one of the numberless prints to be found everywhere in the shops, in the papers, on our walls, or in the collector's portfolios. Their production remains a mystery that stands in the way of enjoyment, and thus it happens that the public takes a keen interest in one branch of the fine arts, wherein only a very few can be possessors, while another branch, the products of which thousands and thousands could buy and own, attracts but little interest.

In matters of science too we are at first ignorant; but elucidations are heaped upon us. If it be a fact to be welcomed that every slight scientific discovery immediately calls forth a goodly number of explanatory pamphlets, then it seems to me that a book which tries to explain all about engraving should not be superfluous. Not one in a hundred thousand will ever have anything to do with Röntgen rays, wireless telegraphy, and the like, while it is not too much to say that every man and

Digitized by Google

woman in the civilised world see black-and-white pictures almost every day of their lives.

Almost without exception they look at them blindly—in two ways. They will see, for instance, hundreds of half-tone blocks and never notice the screen before their attention is called to its presence. That is one way of looking at them blindly. They will look at them just as they look at oil-paintings, and that is the other, more serious, way of looking blindly at black-and-white pictures. Their beauties are not the beauties of oil-paintings, and if you wish to enjoy them you must train your eye to find their proper qualities, not to look, as it will unconsciously do, for the qualities of a painting.

The object of this book is to try to help the reader to attain a double end. It will tell him all about the different methods of engraving, etc., noting their invention, explaining their process, and enabling him hereafter to recognise at sight whatever manner of print he may have placed before him. Few people will guess how much this knowledge, that seems rather exoteric, when once acquired, will help towards a ready appreciation of prints and a growing interest in them. Furthermore, the attempt will be made, at least in a small degree, to offer an æsthetic guide—that is, to indicate what really are the beauties proper to black-and-white art, and in what manner we can reap most enjoyment from them.

The amount of enjoyment to be obtained from Black-and-White is far greater than people would generally believe. I should like to insist that it is not only a matter of great moment to know something of the manner in which artists work, who are as great in black-and-white process as are artists in any other method, whether fresco, oil-painting, sculpture, or architecture, but

Digitized by Google

also that an intelligent acquaintance with their work brings us into delightful intimacy with the artists themselves.

The character of Dürer is less clearly apparent in his paintings than in his woodcuts, of Mantegna less in his frescoes than in his engravings, and even of Rembrandt less in his canvases than in his etchings. In the case of Dürer his black-and-white work is unquestionably more beautiful and important than his paintings. The same may be said of Beham, of Van Dyck, of Claude Gelée, of Goya, and others. Finally, there are masters like Callot, Nanteuil, Masson, Méryon, whom we meet only in this field.

Some of these men have produced pictures in black-and-white as beautiful as the marbles of Greece or the paintings of a Velasquez. They even offer us some additional attractions over and above those that we find in the other forms of art. High art, so called, always keeps its distance. It may be looked at and admired, perhaps discussed, but that is all. When we once begin to look at prints, we fall into the habit of studying them. They are objects with which we may come into closer contact, which we may handle and fondle; their art is one of intimacy and privacy. Often we seem to see a master at work when we follow him through a set of trial proofs. The manners and customs of an age are illustrated by prints infinitely better than by monumental works of art. It gives us pleasure to notice that our eye is being trained to detect differences, to recognise masters, to value the quality of an impression.

Thus any one who will trouble himself to gain the information necessary to the understanding of prints will find that, in addition to the æsthetic enjoyment he has

Digitized by Google

derived, he has been awakened to many new interests which will henceforth ensure his partiality for this form of art.

Perhaps mention should be made of the fact that a number of somewhat similar books to the present are already in the market, some of them very excellent. The important difference between them and my own is that they are addressed to quite a different class of readers. They are written by professional etchers for amateurs, to whom they explain all the tricks of the trade, bestowing a deal of practical advice and giving an amount of detail that would weary the general reader. Besides, they discuss only the methods in vogue now, and tell the reader nothing about obsolete processes. The present volume is meant for the man who wants to enjoy and understand the prints already in existence, not for him who wants to try his hand at making new ones.

Digitized by Google

CHAPTER I

THE THREE DIFFERENT KINDS OF PRINTED PICTURES

THERE are three different kinds of printed pictures:

Relief prints,
Intaglio prints, and
Plane prints.

In relief prints all the lines of the design stand out in relief, while the spaces which are to appear white in the picture are cut away, as in type.

In intaglio prints the lines which are to print black are sunk below the surface, which is to remain white.

In plane prints lines and white spaces lie upon the same surface. The printing here rests upon chemical action, the lines being made to attract the ink while the spaces are treated so as to repel it.

Roughly speaking, woodcuts constitute the first class, engravings upon copper the second, and lithographs the third; but it must be remembered that the material upon which the picture has been worked is not an essential part of the distinction. Metal has been used in place of wood; zinc, steel, or even wood, in place of copper; zinc and glass instead of stone. The names of the processes

Digitized by Google

were in use before such substitution of material became common, and thus have come to be applied generally, but they do not specify the vital differences of the three classes. We will proceed to treat of them in the order given, which is at the same time the order of their invention.

Digitized by Google

CHAPTER II

THE RELIEF PROCESSES

THE relief process allows virtually of only two methods of work, the choice being dependent upon whether the woodcutter (we will use this customary designation for shortness) works his design from white to black, or from black to white.

In the former case, he takes a block of some hard wood, like cherry, pear, preferably box-wood, sawn lengthwise like a plank out of the tree, about an inch thick, with a plane surface of sufficient size. Upon this he draws his design in simple line. Should he have to copy an existing design he must take care to reverse it, which he can do by drawing it as seen through a looking-glass. Existing designs can also be easily transferred by means of tracing paper; if soft leadpencil, chalk, or sanguine has been used the drawing need simply be damped, placed face downward upon the whitened surface of the block, and the back of the picture carefully rubbed with a paper knife. This at once reverses the design, so that it comes out right in printing.

As soon as the whole design is on the block the woodcutter takes various tools and cuts away all the space left white between and around the lines. Where the spaces are large he will have to cut deeply; where they

Digitized by Google

are small, as between different lines of close shading, he will not have to cut to the depth of a sixteenth of an inch.

By this means all the lines are left standing out in relief. This is the old method of woodcutting, and is called black-line work.

Chiaroscuro woodcuts, done in surfaces instead of lines, offer in principle no difference to this method, for the surfaces are in reality nothing but irregularly distended lines, and the woodcutter uses his tools in such a manner as to leave these surfaces standing out in relief just like the lines. In chiaroscuros two or more blocks are usually printed one on top of the other.

The second method of relief work is in a way the reverse of the first, and is employed when the design to be cut does not consist of clear and distinct lines, but of surfaces and graduated tones; for instance, when the woodcutter copies a wash-drawing or an oil-painting. For this work the woodcutter takes a block of wood which is a section from the tree, sawn across the grain, and presupposes it to be black. Where the design grows lighter in places he digs out little dots, patterns, or lines in proportion. He does not employ the knives of the old method to dig out his white lines, but uses tools called 'gravers,' and altogether his method of work is entirely borrowed from line engraving on copper.

This is the modern method of relief process, and is called white-line work.

The blocks, when ready cut, are inked by means of a roller, upon which the ink, which must be rather viscid for delicate blocks cut after the new method, has been evenly spread by frequent rolling. The wooden roller is covered with some material, like kidskin, which is smooth and soft without being yielding, for otherwise the

Digitized by Google

ink would be pressed down into the white lines or into the spaces not left in relief.

The printing of relief blocks is done in the common printing 'platten' press, in which there are two parallel planed iron plates. The lower one is set fast, and upon it the block, after it has been inked, is placed face upwards. After paper has been put upon the block and some waste paper or cardboard over this, the printer, by pulling a lever, presses the upper movable iron plate downward, thereby taking an impression. Between each two impressions the block must, of course, be inked anew.

All corrections in woodcutting are extremely difficult, for if anything has been cut or grooved away by mistake, the relief, of course, is gone at that place and cannot be easily restored. In order to accomplish this the block would have to be plugged with a new bit of wood driven in until its surface is equal with that of the original block. This is very difficult, and it is almost impossible to do it in such a manner that the outline of the plug does not appear in the impressions. In former times it was done very seldom if at all, and in modern woodcutting it is by no means common.

Woodcutting as a pictorial art goes back in Europe to the fifteenth century. Until recently it was believed that the oldest dated woodcut known to be in existence was a Madonna of the year 1418. Only one copy is known, and it belongs to the Royal Print Room at Brussels. However, authorities agree now that the date has been read wrongly, and that a St. Christopher, which forms part of the Spencer Collection, and bears the date of 1423, should really enjoy the distinction of priority. Some of the undated prints may go back to before 1400 A.D.

Digitized by Google

Woodcuts were at first used as a substitute for miniatures. The same amount of trouble and expense that would supply one rich monastery with a finely illuminated missal would supply a large number of poor ones with a somewhat similar book. The economy of the new art seems to have been recognised immediately, for we see that it was at once employed for the benefit of the poor man. He who could not afford to buy a painting of what he liked to see, could easily pay a few pence for the sheet that showed him a black-and-white picture, quite as intelligible, and perhaps quite as beautiful in his eyes, as the oil-painting. The Church, ever on the look out for new chains with which to secure man's dependence, straightway profited by woodcutting, and disseminated pictures of Madonnas and of saints far and wide.

An examination of these early productions reveals at first little but their crude clumsiness. Heavy angular strokes outline the figure, there is no shading to speak of, and the muscles of the face or of the body, the folds of the dress, etc., are suggested in the most awkward primitive manner. The causes of this crudity are various. In the first place woodcutting, the cheap medium of instruction for the people, flourished some time before it rose into the artistic stage. At first nobody thought it worth his while to express a subject not only distinctly, but also with an eye to beauty. The professional artist—that is, the painter or miniaturist—probably did not take to woodcutting before it was an established thing. The fact that most of these single sheet woodcuts were sent out coloured by hand is important as showing their descent from miniatures. But it does not stamp them as an article of luxury, of high art, as one might suppose.

Digitized by Google

Quite the reverse is the case, as will appear as soon as the system of colouring is explained. It was done in a most summary fashion. The districts or schools—as, for instance, the woodcutters of the Lower Rhine, of Suabia, and of Nuremberg—had each only some five to seven colours to work with, never mixing any, and with them they tinted every production of their press indiscriminately, whether it was a Madonna, or a Crucifixion, or the effigy of a saint. The colours of a school do not vary, and thus it happens that the colouring of these woodcuts is our main guide towards localising them, which in itself is a difficult business, as they are all unsigned.

A second cause for the æsthetic deficiencies of the earliest woodcuts must no doubt be sought for in the general failings of the age, and these were no less failings of the eye than of the hand.

We are led to the necessary and strange conclusion that a fifteenth-century eye did not see as much as an eye of the nineteenth century. As experience trains the eye of an individual to greater discrimination with increasing years, so it seems to have trained the eye of the human race in the course of centuries. The retina of the man who stepped into the street four hundred years ago actually was not susceptible to the impression of so many details as a retina of the nineteenth century. This, rather than any imperfection of the hand, seems the true cause of the superficial conception of nature during the fifteenth century, which, as displayed in the best works, is misapprehended by many as a manifestation of voluntary style.

Indeed, the inaptitude of the hand, although doubtless to be reckoned with, should be called upon only in

Digitized by Google

the third place to explain the imperfections of the early woodcuts. When we see what marvellous handicraft other contemporaneous artisans were capable of, we cannot doubt that as soon as ever it came to be of sufficient importance the manual difficulties of the art would be quickly mastered. As a matter of fact, after struggling along for more than half a century, woodcutting was suddenly raised into a fine art by Albert Dürer, and almost as suddenly the failings to be set down to poor handicraft disappear.

When once we come to Dürer we shall no longer consider woodcuts as unsatisfactory—at least, not after we have made a study of him. Beyond a doubt this magnificent artist's most impressive work was done in the medium of woodcutting. The possibilities of the art were recognised by him, and accorded with the bent of his genius. It is an art full of restrictions, one in which style is based upon simplification and accent. Dürer had a marvellous faculty of seeing broadly and simply; his superabundant creative energy led him to express himself strongly; he could therefore in this art aim at an effect of grandeur which he never reached in oils, nor even in engraving, for even engraving was too delicate to have been the best medium for the most imposing creations of his mind.

When we begin to study old woodcuts, one of the first problems to interest us is their grouping and the attempt to assign each to a particular locality. Success rests primarily, of course, upon our ability to recognise similarities of drawing and of conception. By chance or by reasoning the origin of some one print will be discovered and with it that of others which we may be able to group about it. In an attempt to group prints we

Digitized by Google

have other features to help us besides this critical examination. One of these, the colouring of the old woodcuts, has already been mentioned. Another important aid is to be found in the paper itself, and more especially in its watermark.

That all paper of the fifteenth century was manufactured by hand is a matter of course. It was made of vegetable fibre, principally of cotton and linen rags, which were cut, ground, and boiled into a pulp. The pulp was bleached, then dyed to the tint desired, and slightly sized—that is, mixed up with some resinous substance which would render it slightly waterproof. This sizing, however, was not carried to such a degree as in our modern smooth writing-paper. Some of the pulp was then run upon a 'mould,' which is a wooden frame around a rectangular piece of rather closely woven wire netting. The paper maker then shook the mould carefully so as to spread the pulp in a thin even layer, and the water ran off through the netting. The resulting sheet was then dried further by being pressed. In most cases little figures of wire were placed upon the middle of the netting. These, being slightly raised, resulted in the sheet being thinner at that place, and thus when holding the sheet between the light and the eye the figures are plainly seen as watermarks. Almost all hand-made papers have them, and among the earliest watermarks the bull's head, the high crown, the dog, the double castle, &c., may be named. Now, although it is not quite certain whether they were trademarks of different factories, or only signs to denote quality and size of the paper, yet the exact shape of each watermark differed in each factory. Accordingly, if we find a watermark in an anonymous print identically the same as in another print

Digitized by Google

which is known, we shall have found a pretty safe hint towards localising the anonymous sheet.

In Dürer's woodcuts, moreover, the watermarks help us greatly in determining priority of impression. He printed upon different papers at different times. Should we find an impression of one of his earliest woodcuts—for instance, one of the Apocalypse set—upon paper bearing a later watermark, we should regard it with suspicion, even if it look well at first sight. Upon closer examination it will generally be found to have been 'doctored' by the print restorer. In fact, the watermark guide is the principal means of recognising impressions of Dürer's woodcuts taken after the master's death by his heirs.

With these remarks we have touched upon another matter of importance, the second thing to interest us when we begin to study old prints. As we continue to look at them we gradually learn to distinguish a good from a poor impression. With a little practice and application this should be an easy thing; however, there are some people who try to make it hard for us.

Presupposing that the same care is taken by the printer in each impression, the impressions grow poorer and poorer as they progress, whatever manner of block it may be, for the printing press wears them all. The earliest impressions come out black and clear, each line showing as distinctly as in a careful pen-drawing. When the printing has continued for some time the relief lines are slightly pressed out of shape here and there, thus losing their clear-cut distinctness. They do not take the ink as well as at first, being no longer perfectly plane. This causes the impressions to become grayer and more smudgy. After some more printing the block suffers

Digitized by Google

still more, for little bits of lines which stand out separately, such as the border line, break off under the strain of the press. As a consequence some lines in the impression show little interruptions, and now the block really should be no longer used. But there are indiscriminate buyers, and there are heirs of artists who think more of the money in their pockets than of the artists' reputation; consequently the printing still goes on. It even happens that blocks are sent to press decades and centuries after the artist is dead. They have suffered additionally in the meantime: the worms have been at work upon them. When we have an impression in hand in which we find black lines interrupted, or black surfaces perforated with little round holes, we may know at once that it is very late and worthless, probably only a ruin of the master's original design.

It is thus very easy in theory to determine the 'state' of a woodcut, because 'state' and quality of impression go hand in hand, and very little attention will soon enable us to determine the latter. The only difficulty in our way is the work of print restorers. They do their best to deceive us by filling up gaps in the lines with Indian ink, and touching up a border line here and there. When cleverly 'doctored,' nothing short of water and a strong magnifying glass will suffice to betray such a print and convict the man who does it, or rather who tries to sell it as an early copy. But let us leave the malefactors and return to Dürer.

Dürer, who raised woodcutting to the condition of a fine art, signalises also another important change in it. Up to his time probably every woodcutter was his own designer. Dürer himself cut many if not all of his earlier designs upon the block, but later he found this to be a

Digitized by Google

waste of time and energy. The task is a laborious one and is in the main mechanical; a man, moreover, who devotes himself exclusively to it can in a short time acquire greater aptitude than the artist who only now and then cuts one of his own designs. It is highly probable that this 'division of labour' was permanently established in Dürer's time, and that from thenceforward the artisan woodcutters formed a new craft distinct from the artists.

Black-line woodcutting is the most conventional form of art. It forces our eye to see things differently from what they appear to be like in nature. While we require values as soon as we see things in their natural colours, we cannot and do not get them in the old woodcut. For this is an art of lines which in themselves are too pronounced ever to be able to be blended into a semblance of tones. They never can express tone values, since, unlike the lines of intaglio printing, they have no body. Thus relief printing cannot vie with the other method in the attempt to render aërial perspective or to give local colour. It was a proof of Dürer's genius that he appreciated this deficiency of the art and made a virtue of it. Although he struggled for rich deep values in painting and was joyous over attaining his end while in Venice, he had the self-control and the admirable discrimination not to attempt to introduce them into his woodcutting. Instead of trying to soften the artistic inflexibility, the arbitrary sternness of the line, he accentuated it, giving it a character of its own, so that it alone could be the interpreter of the artist's intentions.

His immediate followers have drawn with more delicacy. They well could do so, for meanwhile the skill of the professional cutter had increased. However, by doing this

Digitized by Google

they seem to emulate the sister art of copper-engraving rather than to proceed on the right road towards a development of the woodcut style.

Black-line woodcutting as a craft has remained unchanged to this day, and if we receive an impression of great variety upon looking successively at the works of Wohlgemuth, Dürer, or Amman, down to such men as the caricaturist Keene, or the famous German artist Ludwig Richter, it is because they all say different things, not because they employ different means.

Chiaroscuro woodcutting arose as a sort of transitional method between the old and new style of woodcutting. Its methods were those of the black line, its aim brought it nearer in effect to the new white line. The art arose in Germany, but was practised very shortly afterwards beyond the Alps, and it was in Italy that it principally flourished. The chiaroscuros were invented as a means of reproducing wash-drawings. German artists had at the beginning of the sixteenth century a predilection for drawing upon papers tinted dark blue, dark green, brown, and the like. They worked the outline in pen or pencil, and put the lights in with white body colour by means of a brush. In Italy a fair number of studies of Raffaello Santi and of F. Mazzuoli were executed in sepia and wash. All these drawings or sketches show from two to four different tones, and in order to reproduce such a sketch the woodcutter would make one block for each tone: for instance, one for the black outline, one for the white high lights, and one for the tone of the background. Each block was printed successively upon the paper, care being taken that they should register exactly. In reality of course this is colour printing; however, we rarely see many different colours employed for one print, generally

Digitized by Google

there are only two or three different shades of the same colour, preferably brown, as sepia drawings were most frequently reproduced.

Both Germany and Italy may lay claim to special attainments in the art of chiaroscuro woodcutting. In the north the method was practised only a short time, but some of the best artists devoted time to it, and though they scarcely ever used more than two or three blocks for one print, they invented special drawings for them, thus raising it to the level of an original art. German chiaroscuros receive an additional interest from the fact of their great scarcity. In Italy, on the other hand, more blocks were generally used, and thus finer gradations of tone were reached. But here the chiaroscuro woodcutters were seldom their own designers; they were generally content with reproducing studio sketches of Raffaello Santi, F. Mazzuoli, Tiziano Vecelli, and other famous artists. About a century later Count Zanetti revived the art; he used from seven to eight blocks for a print, and at times his work is quite rich in colour.

Contemporaneously with Zanetti the art was practised by Jackson, an Englishman, in much the same manner; he, too, employs many blocks and colours, thus approaching tone colour-printing rather than the old chiaroscuro style. In France, England, and Germany chiaroscuro was used frequently during the seventeenth and eighteenth centuries in combination with etching, and also as a method of reproduction for sepia and wash-drawings.

To call the white-line woodcut a modern method is not strictly accurate. To be sure, it has become important and has only been brought to the notice of the public at large quite recently; still its principle is not new. Like so many of our inventions, or of the improvements which

Digitized by Google

we think to be decidedly *fin-de-siècle*, it has had a forerunner, and a very early one too. This is represented by the so-called dotted prints, many of which were made during the last quarter of the fifteenth century; that is, comparatively only a short time after woodcutting had come into use. In these prints the cutter did not have to lay bare lines, but to lighten surfaces, which he did by cutting out or punching little dots of different sizes, small patterns, and white lines. Thus in the face, where the light is highest, he applied very numerous small dots; in drapery the dots would be set further apart and made larger, according as the garment was supposed to be more or less dark.

In appearance these dotted prints are even less pleasing to the eye of to-day than the contemporaneous black-line woodcut. For, working by this method, the fifteenth-century man would naturally find it much harder to attain satisfactory drawing. Perspective and facial expression could not even be attempted.

Dotted prints were extensively employed in the production of 'Books of Hours.' These were, in the majority of cases, printed on vellum, which circumstance would wear the block a great deal more in the press. As, however, we have found a great number of impressions of some of these prints, all of them equally good, and none of them displaying any interruption in the line, as, furthermore, there is a good deal of ornamentation about the designs, the theory has arisen that they were cut and punched in metal by goldsmiths. The ink runs together more than in the usual woodcut, other coincidences support the theory, and indeed some of these dotted metal blocks have been found.

In our own century this sort of work has been revived

Digitized by Google

for a special purpose. Illustrations to astronomical books are made in this manner. The surface of the wood or metal block is left black to represent the sky, and dots of different size, which, of course, come out white in the print, are cut out to represent different stars and constellations.

The white-line woodcut of to-day arose rather suddenly, because the best illustrated periodicals all over the world felt it in their interest to support it some time ago. Still a preparatory stage led up to it, starting in the first quarter of the century with Bewick in England, Gubitz in Germany, and others. It was in the nature of a transition from the old method to the new. The more skilled the old craftsman grew the more difficult tasks were set before him, and presently he was told to cut drawings executed so elaborately that it was not an easy matter to lay the black line bare. He found it would be easier, instead of doing this, to simply dig out the white spaces. The old knives would not allow of that, so he had to look about him for new tools. He found them at once in the burins that the engraver on copper used. With them he could dig out very slight white spaces. With them he could undertake to treat the design furnished him quite differently; instead of looking upon it as composed of a multitude of black lines, leaving very little of the paper white, he could look upon it as an essentially black drawing—that is, one drawn in surfaces or tones, where, by digging out comparatively few white lines, he could introduce the necessary lights. Thus the new system grew out of the old, and we see it reach its full development as soon as the black lines are completely abandoned, even in those places where the work is more open.

Digitized by Google

The white-line woodcut has enjoyed great, and, upon the whole, deserved popularity. But it seems to me that it has been overrated a little. The new craftsman, although he is not a creative designer, has a good deal better claim to the title of artist than the old. For the old one had merely to facsimile, to lay bare the lines drawn for him upon the block, and this is quite mechanical work. The modern woodcutter has in most cases a photograph pasted on his block, and that is all. It shows no lines, black or white, whatever, and he himself has to decide where and how much to grave away out of the block. This, of course, requires brains and judgment. Furthermore, this cutting must be done by a system of lines, and he must in each case establish their direction. Virtually he has the same task set before him as the line engraver on copper.

It seems to me that he has within a very short time fallen into the same fault. Upon looking over the quantity of white-line work done during the last twenty years on both sides of the Atlantic, we are struck by the fact that the line system in all is practically the same. It is necessarily an artificial and arbitrary system; consequently we must get weary of it, since it is used only as a means and not as an end. There is a strongly felt want of variety and freedom in these illustrations, and the fault lies not with the craftsmen, for their skill is something astounding, but rather in the whole character of the art. In proportion as this fact forces itself upon us our admiration for these illustrations necessarily wanes.

There are, however, two strong points in their favour. The first is, that the white-line woodcut is a form of illustration which can be printed upon a steam press; consequently very large editions can be printed cheaply and in a short time. But this point it has in common with

Digitized by Google

the other woodcut methods, and in fact with all kinds of relief processes. The second is that it enables the artist to attempt at least aërial perspective and local colour—in short, the giving of true values—which we saw was rather beyond the black-line woodcut. But this point it has in common with the photo-mechanical half-tone process; in fact, it is herein even surpassed by this process, of which more will be said towards the end of the book.

It does not appear to me very hazardous to predict only a short life for the modern 'trade' white-line work. Half-tone process is destined to supplant it. Those people who delight in that system of lines vacillating so dangerously between art and artificiality will fall back upon burin engraving, wherein, after all, it can be displayed to better advantage. White-line woodcut and half-tone process have called into existence a new kind of paper, and this very fact shows the connection between them. The work in both is very delicate; the ink-line has no body, consequently the paper should be as smooth as possible. Old hand-made paper did not fulfil this requisite, for the fibres not being run into one another, under heavy pressure, always left the surface of the paper more or less rough. When writing upon it, the pen generally catches. Long before machine-made paper came into existence, a remedy was found in 'loading' the pulp—that is, introducing some material, for instance, china-clay, the particles of which settle between the fibres of the paper and thus smooth its surface. Modern illustration paper is given in addition a coating which unites firmly with the body of the paper, and fills out all gaps and uneven places, so that the surface of the paper is absolutely white and as smooth as glass or ivory. Upon such paper a block can be printed

Digitized by Google

to perfection, and whatever niceties the chemigrapher or white-line woodcutter can manage to put upon his block will come out in the printing.

There is of course some white-line work done at the present day which will always excite our highest praise, for it is not trade work—that is, work done by professional woodcutters after oil-pictures—but work cut by the original artist. Such, for instance, is the work of Lepère in Paris, who, like Dürer, does his own cutting and engraving. As is always the case when an artist himself uses the tools, the result is more satisfactory; there is more of originality, more freedom of hand, than when he gives his design to some professional woodcutter, however skilled, to cut. The latter wields the tools like a craftsman, and his limited training, which has been all directed to a special purpose, cannot be disguised. Vallotton is another proof, this time with reference to black-line work, of the superiority of the artist to the professional craftsman who sticks to the rules of his school. Vallotton, of course, has not acquired skill sufficient for the delicate work which a trained woodcutter accomplishes; but he has at the same time a natural bent for broad, sketchy, and bold drawing. The two go hand in hand, and such a perfect harmony of conception and execution will always result in good work.

As a means of illustrating books, the different methods of relief printing have up to now occupied the first place, and always will do so, simply because of the fact that they can be printed cheaply and speedily. With the lightning steam press speed has reached such a climax that editions of many thousand copies are printed in this manner in the same time that would suffice only for about one hundred copies of an intaglio plate.

Digitized by Google

CHAPTER III

THE INTAGLIO PROCESSES

THE art of making intaglio plates, generically called engravings on copper, is a much more complicated affair than that of making relief prints. In course of time very many different methods of work have been evolved, while in wood-cutting we found but two.

The oldest and the simplest method is burin, or line, engraving.

The engraver takes a well-hammered, planed, and polished plate of copper of a size necessary for his design. Other materials, such as silver, gold, brass, stone, pewter, zinc, steel, have been used; only the two last named, however, to any great extent, and, taken altogether, the use of copper distinctly predominates, for it is hard enough to withstand the press and yet soft enough to offer no extraordinary resistance to the graver. Should the surface of the plate be about as large as a page of this book, the plate itself would need to be about an eighth of an inch thick. The thickness increases slightly with the size of the plate.

The design to be executed upon this plate must in the case of line engraving, as the name implies, be done in pure line, no wash or stumping being admissible. It must also, as for every kind of printing, be reversed.

Digitized by Google

As the polished copper surface does not show a lead-pencil or sanguine mark plainly, the plate is generally given a coating of varnish before the artist draws or transfers a design upon it. There are numerous ways of transferring designs. You can place your drawing, after having left it for a short while between damp sheets of paper, face downwards upon the plate and pull both through the press. If no press is near at hand, you can make a tracing. Place it face downward upon the plate, insert a sheet of blacklead transfer paper between it and the plate, and then go over all the lines of the tracing with a blunt point. Another way is to place a sheet of gelatine upon your drawing, and trace it by scratching lines with a needle in the gelatine. Fill these lines with blacklead dust and place the gelatine face downwards upon the plate. Rubbing with a paper-knife along the back of the gelatine transfers the design. Still another way is to trace the drawing through oiled paper with sanguine mixed with sugared water. The tracing is placed face upwards on water for a few minutes, which dissolves the sugar and renders the lines of the drawing moist. Then the tracing is placed face downwards upon the copper plate and its back carefully rubbed with a paper knife as before. In all these methods the drawing has been reversed, and consequently will come out right in the print. Artists working direct from nature without the aid of a looking-glass of course cannot reverse the design. They generally make an outline sketch of their subject upon paper, rub the back of this with lead-pencil, place it face upwards upon the plate, and then go over the lines of the sketch again with a pencil or blunt point. All detail of shading is put in afterwards upon the plate direct. As a matter of fact, the artists who

Digitized by Google

engrave an elaborate plate after a painting also take off the varnish with turpentine after the outlines have been registered. They put in, too, all the delicate shading without the aid of a transfer, and with perhaps only a drawing at their side to guide them.

As soon as the drawing is upon the plate, the artist employs a burin or graver. This is a bar of steel from two to four inches long, four-cornered, and ground down obliquely at the lower cutting end. The upper end fastens into a semicircular handle, something like half a mushroom in shape, which rests against the engraver's palm when the instrument is in use. The cutting point varies according to whether the bar be square or rhomboid in section, and according to whether it is ground down more or less obliquely. The sharpened end is always lozenge-shaped. With this instrument the engraver digs out little furrows following each line of the drawing, digging a little deeper of course where the line is heavier. He holds the burin at a sharp angle to the plate in his right hand, and very often moves the plate itself with his left, the burin being held still. The plate rests on a little sandbag, or, when it is large, on a movable palette. The furrows thus made are very shallow, much shallower than one would think from seeing the lines in a printed proof. Probably the heaviest and broadest furrows of large-line engravings do not reach the depth of one-fifteenth of an inch. The very slightest scratch will print.

Should the shaving not have come out clean, but have left the furrow with rough edges, these must be carefully removed with a three-edge scraper, for there may only be indentations in the plate, no elevations above its original surface. The burnisher and a piece of charcoal may help to finish the scraper's work, and any part so

Digitized by Google

retouched is finally treated to a rubbing by an oiled canvas coil, so as to regain the original polish of the copper. Thus, too, if any line should by accident have been engraved too deeply, it may be reduced by a burnisher and the other instruments. Of course, this will result in lowering the surface of the copper all round the line thus scraped and burnished, and the depression would show in printing. To prevent this the plate is turned about, the exact location of the depression is determined by the aid of a pair of calipers, and it is then hammered out from the back upon a small steel anvil. Thus the surface of the plate is quite level again and need only be repolished.

When all the lines have been engraved the plate is ready for printing. This is a slow and laborious proceeding compared with the printing of relief blocks, and to this day it must be done by hand, steam printing being altogether out of the question. The engraver's ink is of a different composition from that of common printer's ink, finely ground pigments, usually Frankfort black, being mixed with burnt linseed oil, sometimes with nut- or poppy-seed oil. The mixture is made rather stiff, and the engraver keeps it in a bag of linen through which it can easily pass when made fluid by means of heating. The plate is now warmed and inked. The inking is generally done by means of a dabber, with a face of coarse blanketing, on which the ink is spread with a knife. Great care must be taken that the ink gets into all the furrows, and by dabbing it is spread all over the plate. Then the surface of the plate is wiped clean with a rag and the palm of the hand. The ink comes off rather easily, since the copper, being highly polished, would naturally reject it, but care must be taken not to wipe the ink out of the lines along with the rest.

Digitized by Google

When inked the plate is placed face upwards in the press, the paper, which must be a little larger than the plate and must have been thoroughly damped, is then put upon it, and some soft waste paper or woollen cloth on top of this to equalise and soften the strain; then the whole is pulled through the press. The printing press this time is not a platten press such as has been described on page 11, but a cylinder press. Its plate runs upon rollers, and above and almost in contact with it there is a strong horizontal cylinder. By turning a crank, cylinder and plate are moved in opposite directions and drag anything placed upon the plate between them, on the principle of a common clothes-wringer.

Upon carefully lifting the paper off from one corner, one discovers that it has drawn all the ink out of the furrows, and the plate is again clean and shiny, ready for another inking, while the whole of the engraved design appears line for line black upon the white paper. The next thing to do is to dry the impression, and finally to smooth it out by slight pressure.

The strain in the cylinder press is far greater than that exerted by the common printing press. There is always a mark on the paper around the edges of the plate, showing where it has been pressed. Large and thick plates must be bevelled off on all four sides, or the pressure would break the paper off all along the edges of the copper. This plate-mark is a thing to which we shall return in discussing methods of distinguishing one kind of print from another.

The origin of line engraving is doubtless to be found in the art of the goldsmith. This statement is verified by the fact that some of the earliest engravers

Digitized by Google

affixed the title of 'goldsmith' to their signatures upon the plates done by them. The invention of the new art may have happened somewhat like this. One branch of the goldsmith's craft consisted in making nielli. These are little plates of gold or silver, upon which designs were engraved with burins. In order the better to detach the drawing from the reflecting surface of the metal, the furrows were filled with a black alloy called niello (Lat. *nigellum*), from which these plates derive their name. The nielli were 'paces,' or ornamental plates let into the sides of small coffers, shrines, and the like. In order to control his work as he engraved it, the goldsmith would sometimes take an impression of it in wax or sulphur, for when the lines are in relief one can see them better, and besides, these materials do not reflect as much as the polished metal does. One day it must have occurred to someone to fill the furrows with some black substance like printer's ink and to take an impression on paper. There may have been chance about it, and probably the first man to take such an impression was a good deal surprised upon looking at the result to discover that the paper had drawn all the ink out of the engraved lines.

It will always remain impossible to determine when the first instance of the kind took place. For the man or men who first took such impressions looked upon them merely as better methods of controlling their work. Probably they threw these trial proofs away, and some time may have elapsed before it occurred to them that instead of one or two proofs they could easily produce a large number of equal impressions—that the plate, up to now the principal thing, might be used only as a medium to produce something a good deal more valuable, namely, the edition of impressions. As soon

Digitized by Google

as they discovered this, they found out, too, that some harder material must be employed, and copper replaced gold and silver.

Thus we see that the earliest line engravings were nielli—were impressions from a plate that was not meant to be printed at all. That they must be excessively scarce is self-evident. Should the reader, however, happen to go some day to a Print Room and ask for 'nielli,' he will be shown quite a number of them at some places. There is a second kind of nielli, of a somewhat later date. These display some of the neatest design and ornament of the Italian Renascence, and are the work of artists who wished them to serve as models for goldsmiths to work upon. These later nielli were probably engraved upon copper and regular editions of them issued. There is one sure sign which betrays a niello to be one of a second class (i.e. a pattern to copy from), and not a true niello (i.e. a trial proof), namely, the number of impressions known of any one plate. If more than two, at the most three, copies are known to exist, the engraving cannot be a true niello, as no goldsmith would be likely to take more than that number of trial proofs, since each one of them wears away the delicate work upon his soft gold or silver plate, and the plate, which in his case was the object of value, would be ruined.

All nielli paper impressions show the drawing, of course, in reverse. For instance, a soldier will wield his sword with his left hand, and any lettering upon the print would have to be read in a looking-glass. We should not, therefore, be likely to mistake a niello for an engraving. But many of the early engravers forgot to reverse their designs, so that we might fall into the error of taking some line engravings for nielli. Here are some

Digitized by Google

of the differences. As a rule all the early cisalpine engravings are larger than the nielli. The same general rule holds good even to a greater degree for early Italian prints. The whole manner of design in the nielli savours more of the ornamental, in the engravings more of the free artist. In niello plates the whole surface must be pretty well covered, for where any part has been left blank an unintentional effect is produced by the bright reflection of the gold or silver. Thus sky and background, which in engravings would often be left untouched, as the white paper does not reflect, are in nielli generally covered with lines.

It is very probable that the goldsmiths only gave an impetus to the new art of engraving by establishing the preliminaries of its technique. Artists—that is, painters—took it up there, and it is they who, with greater powers of design and conception, developed these beginnings into a form of high art.

The first stage of line engraving, as a thing distinct from the niellowork of goldsmiths, betrays its dependence on something already existing. This is always the case with new inventions in art. When they were able to engrave a printable plate, artists were by no means already in possession of a proper method of handling the burin. The only kind of work in black and white which they had done heretofore was pen- and silverpoint-drawing; and, as is quite natural, we see them use the graver at first as if it were a pen or silverpoint. Their method of shading consists of heaping a great number of more or less parallel, very slender, and straight strokes. A point draughtsman finds this the natural way to operate. There is very little variation of line. The majority of Italian engravers were satisfied with this manner of working,

Digitized by Google

even down to the end of the fifteenth century. It did not occur to them that some new and specific style might be found for the burin. They were recruited for the most part from among the number of great painters, men who represented a high stage of artistic development, who had lofty conceptions, and whose abilities ranked them high above contemporary artists of other nations. We may well imagine that to them engraving was no more than a means of multiplying a drawing. The conception of the drawing completely engrossed them, and left them no time to examine whether this medium—the process of engraving—could be elevated to the position of an end in itself.

Conditions in the northern countries were quite different. The wealth of these nations was at that time not equal to that of the Italian states, nor had circumstances been favourable to the spread of culture to a similar degree. The artists there could not compare favourably with their southern colleagues; they were still fettered by guild regulations, their vision was limited, and their general education wanting. Lack of pecuniary support forbade their undertaking a flight into the realms of high art. Even down to Schongauer they are all of them 'small,' compared with the heroes of the Italian early Renascence. In the north art is based on an economical footing; it does not possess a monumental character. Now it is plain that the artistic energies of a man, when not engrossed by an attention to grand principles of conception, will naturally be devoted to a greater degree to details of execution. It is not a chance thing that oil-painting was discovered in the north. The Italians had great problems set before them, and the making of great compositions required all their attention. They had no

Digitized by Google

time left to make experiments to discover whether there was any medium by which these compositions could be painted better and more easily than by the old tempera colours.

In all probability it was in the same country to which we owe the discovery of oil-painting—namely, the Netherlands—that line engraving was at first practised as a distinct art, and that the artist took time to consider the burin, and to find out its capabilities to develop a new style.

The first thing which he must have discovered is the variety that the engraved line is capable of in consequence of the burin being handled differently. For example, by graving deeper the resulting printed line is not only larger, but also more intensely black and more brilliant. In relief prints such a change does not take place, and a narrow line possesses the same quality of blackness as a broad one. The second discovery, which was made almost simultaneously, is that the system of shading must be brought into more organic relationship to the outlines of the drawing, and again that the mother-tongue of the burin, so to speak, is cross-hatching. Pen and pencil can be used freely in any direction. If lines are crossed in modelling, it may be done quite irregularly, and wherever the shading has not quite produced the desired effect a touch of the brush or of the stump will help it on. Such a thing is impossible in line engraving. The process is difficult and slow; it requires a certain amount of force to dig out the little furrows, and consequently no casual lines occur. Every movement must be well thought out before it is begun, and the engraver is thus bound down to a sedate and well-planned design. The resulting work acquires a character of strictness and regularity; it convinces rather than surprises.

Digitized by Google

An elaborate and regular system of cross-hatching is accordingly imposed upon the engraver by the instrument itself, and this at once gives a special character to burin work ; by means of it all modelling and shading must be expressed. By evolving and establishing this specific character, line engraving became in time the art that it now is—an art which during its best period can boast of superb interpreters. Their finest productions will never cease to give us pleasure. It is true that, just at present, we are living in a time when their fame has somewhat waned. For in our age intimacy, variety, and spontaneity are the characteristics most highly prized in art, whilst the classic stateliness of line engraving is not quite so congenial to us.

As has already been stated, the true character of the burin was discovered in the Low Countries and Germany much sooner than in Italy, and a short time after its discovery we have engravings in the north which, in their own particular way, leave contemporary Italian work far behind. Should any reader happen to see early prints of both nationalities side by side, he would perhaps deem this opinion at first preposterous. But that would be only because he at first fails to distinguish between the design and the engraving. A Mantegna could draw a nude figure with a degree of perfection that no northern artist could think of. That is what would first strike the observer, and it is only when he sets aside the design, and examines the print upon its merits as an engraving, that he will discover that some of the clumsiest northern draughtsmen knew more about the handling of the burin than Mantegna or other later Italian artists ever attained to.

Generalising a little, we may say, then, that line

Digitized by Google

engraving proceeded in stages. At first we have mere pen or point drawing upon copper. The Master of the Playing Cards represents this stage in the north to a certain degree, while Mantegna's work is decidedly of this kind. Then true cross-hatching begins: but the hand of the artist is still unpractised, and his cross-hatching consists of short straight lines, not quite in harmony with the outlines of the design. In time the artists gain better control over the burin, and they learn to engrave a perfectly parallel set of complicated lines, and to cross a second set neatly over the first. Then the third stage is reached, and as soon as outline and modelling come to be blended into a harmonious whole we may say that engraving is practised with a full understanding of the true method. This occurred as early as about the middle of the fifteenth century, as we discover by looking at the prints of the master E. S., a few of which, being probably the latest he executed, bear the dates 1466 and 1467. This is just twenty years later, by the way, than the earliest dated engraving found so far. To prevent misunderstanding, I wish to repeat that this classification in stages is somewhat theoretical and certainly not strictly chronological. Some artists, of course, still worked with straight short lines, after others had long learned to use the curved cross-hatching.

Without attempting to give anything like a history of engraving, we wish in this book to explain all the main points of interest about prints, and the mention of the master E. S. has called up a new one, namely, the subject of signatures. It is one of the many proofs of line engraving being valued higher than woodcutting, that engraved prints were signed at an earlier stage than woodcuts, and also a good deal more frequently.

Digitized by Google

We may congratulate ourselves upon the fact that the practice of signing obtained at all, because it helps us a little out of the maze into which the study of early prints leads us. Dates occur much earlier than signatures, and the first thing we get at all are initial letters, monograms, and conventional signs something like the trade marks of our day. Thus there is the master with the caduceus, the master with the rat-trap, the master with the shuttle, and many others. Among monograms, that of the master E. S. is the earliest, and it is about his time that the northern artist begins at least to attain self-consciousness enough to feel that his work is good, and that he need not entirely suppress his personality. But the feeling does not become a strong one for some time. Even so great an artist as Schongauer is not impressed with the importance of his engravings to such a degree that he feels tempted to sign them in full. Initials and a trade or school mark is all he gives. Curiously enough, it is rather the inferior class of engravers—mostly second-rate copyists like Wenzel of Olmütz, and Israhel van Meckenem—who are the first to sign their names in full.

In Italy matters are different, as is natural in a country where the title of artist had become a distinction and the profession gained quite a prestige. Here we meet with signatures at an earlier period, and such names as Pollaiuolo, Peregrini da Cesena, Robetta are to be seen in full on some of the first Italian prints.

In the matter of signatures great changes take place as time goes on. We have already mentioned that at first there was nothing, and then a monogram or mark timidly puts in an appearance. Then the signature becomes plainer, as, for instance, in Schongauer's case. Dürer's

Digitized by Google

monogram, too, is easily found, though he was careful enough not to spoil a plate by an obtrusive signature. He was perhaps the first northern artist to possess an equal degree of confidence with his Italian colleagues, and we find him carefully signing an important drawing, print, or painting with some degree of satisfaction, fully aware of the fact that he had a right to be proud of his creation. There was another consideration, too, which induced him to make the monogram upon his prints easily recognisable. They were hardly published before they were copied freely by inferior hands, and consequently a plain signature was imperative to protect his artistic reputation as well as from business considerations. In Venice he succeeded in obtaining a decree from the Senate restricting the copyists, and especially preventing them from signing their copies with his monogram. It was there that Marcantonio Raimondi copied his woodcut sets by means of burin engraving! That he should have undertaken such a thing shows how greatly Dürer's art must have struck him, even though he did not understand it well enough to appreciate that it could not be reproduced in copper engraving.

Italian engravers devoted themselves before long to the reproduction of designs by other masters. It was principally Raffaello Santi's drawings and sketches which were thus copied. In Marcantonio Raimondi and his school this artist found a most extraordinary means of spreading his own fame. On a print of this kind a double signature is often to be seen, one monogram being that of the painter who is author of the design, the other that of the artist who engraved it: as an example, an R in prints after designs by Raffaello testifies to his authorship. The same custom prevails at a somewhat

Digitized by Google

later date in the north. Many of the plates by the scholars of Goltzius which reproduce drawings of his bear his monogram, besides that of the engraver. Finally it should be mentioned that the double signature is to be found likewise upon a good many woodcuts from the first quarter of the sixteenth century onwards, for the woodcutter soon begins to think himself worthy of notice, and he generally adds the picture of a miniature knife to his mark, by which it can easily be told apart from that of the artist to whom the invention of the design must be attributed.

The reproductive prints referred to so far only reproduce drawings made especially for the purpose of being engraved, or at any rate given to the engraver by the artist himself for this purpose. Towards the end of the sixteenth century, however, the practice of copying oil-paintings by means of engraving becomes common, and the signature becomes a still more important matter. For now the name of the painter is more essential even than that of the engraver, since the purchaser of such a print would in most cases buy it as a memento of the picture, as we in our days buy a photograph. Just as we do not take any interest in the name of the photographer, the name of the engraver would be a matter of only secondary importance to the purchasers. It was plainly of consequence at this date that the signatures should be placed so as to tell their story quickly and to be easily found. Therefore a place was set aside for them at the lower edge of the print, a blank space being left between the design and the lower end of the plate. In the left-hand corner (as a rule) a name with *p.*, *pinx.*, *pinxit*, or *inv.*, *invenit*, specifies the painter; in the right-hand corner a second name with *sc.*, *sculp.*, *sculpsit*,

Digitized by Google

or *f.*, *fec.*, *fecit* (*aq. fort.*, *aqua forte*) designates the engraver. At the time of the decline in burin engraving, when the reproductive engraver was not even his own draughtsman, there was still a third name, usually placed in the middle of the lower margin with *d.*, *del.*, *delin.*, *delineavit*, after it, to signify who copied the painting in linear design upon the plate.

But even now we have not done with signatures. There is still another set—a set which as regards numbers probably exceeds those of the engraver, painter, and draughtsman put together, and which testifies to the existence of men who have had nothing whatever to do with the production of the plate. These men are the publishers. Originally the artists themselves attended to the distribution of their prints. As early as Dürer, however, we find masters who, in addition to the sale of their own works, occasionally undertake the sale of prints by some of their colleagues, and thus they are the prototype of the publisher. As soon as the production of prints—more especially of those engravings whose main interest lay in what they pictured, not how they pictured it—became a matter of trade importance, engravers would require the assistance of apprentices and scholars. Their labour, although produced under the direct supervision of the master, would not and could not be claimed as his own. But as these prints were executed by as yet unknown men, and as the master attended to their distribution, he had them signed with his name or monogram, generally followed by an *ex.*, *exc.*, *excudit*. Thus some of the early work of well-known engravers, done while they were still apprentices, bears no name but that of the master-publisher. This practice has in some instances obtained down to

Digitized by Google

our own day, a *direxit* being at times put in place of the *excudit*.

We need not look upon this suppression of the real engraver's name as anything very unfair. For very much of the trade work in former days—such as views of places, buildings, monuments, and the like, done only with the aim of giving a more or less faithful representation of the object in question—does not excite in any one the wish to know the name of the author. All that one wants now or wanted then to know is, where such a print was to be obtained, and this the publisher's mark sufficiently explained.

As the trade in prints increased, the real publisher arose, the man who himself knew nothing about the production of the print (and generally very little about its artistic merits, according to the express opinion of most engravers), but who put it up for sale, and who in course of time even gave engravers orders. His name and address will be found at the bottom of most prints from about the beginning of the eighteenth century downwards.

Works that offered special difficulties in the printing, such as the colour-prints of a hundred years ago and some of the etchings of our own day, occasionally bear the name of the printer upon the plate, followed by *imp.*, *imprese*, but this practice has never been widely spread. In modern times famous printers prefer to sign proofs with lead-pencil.

A second topic which bears closely upon the matter of signatures may be treated of in this place. I refer to margins, of which there are two kinds, plate margins and paper margins.

Originally artists chose their plates exactly the size of

Digitized by Google

the design, and the foreground work touched the plate mark at the bottom. The sky in earlier engravings was often left blank, and thus there was white paper visible between the subject and the plate mark. However, this is not a true margin. In time the engraver managed to express everything, even a plain sky, by means of lines, and there was no blank paper left, especially after etching had arisen, which claimed all sketchy, light workmanship for its own. Thus line engravings show the work of the artist covering the plate and touching the border of the plate at all sides.

When the custom of elaborate signatures put in its appearance, a lower margin between subject and plate-work was reserved for the artists' names. An undue regard for symmetry, always rather an unhappy thing in art, must have led engravers to counterbalance the lower margin by others at the top and at the sides. They have been very generally employed for trade work ever since about the middle of the seventeenth century. True artists have never suffered them, and the prints of Dürer, of Rembrandt show no plate margins. They have come down to us even without paper margins for the most part. That is, when ready for distribution they were trimmed down close to the plate mark, probably by the artists themselves. Even the mezzo-tints and the colour-prints of the last century, which were only reproductive and not creative works, prove their makers to have been imbued with a true artistic instinct, since the great majority of them have no plate margin except below, where the title and signatures imperatively demanded one. We admire all these prints as they have come down to us, and this tends to show that we at times, at least, have sense enough

Digitized by Google

to subject our childish love of symmetry to higher æsthetic principles.

The poor taste prevalent during the early part of this century manifested itself, among many other ways, in the delight taken in wide margins. Prints of that period, more particularly line engravings, revel in excessive plate margins. There are instances to be found where pictures about seven inches by nine have been set upon plates twenty-three by twenty-nine, like little islands floating upon a sea of white paper. To make things complete, such prints often figure upon walls in frames which allow a liberal paper margin over and above the plate margin. Whistler very pertinently remarks in his 'Propositions,' relative to the practice of plate margins, 'that wit of this kind would leave six inches of raw canvas between the painting and its gold frame, to delight the purchaser with the quality of the cloth.'

As far as the paper margin outside the plate mark is concerned, it must be admitted that there is a certain charm about a print, when unmounted, which displays the original sheet of paper intact with rough edges, and it seems a kind of sacrilege to trim such a print, especially if it is an old one. Still, enjoying the maiden state of a print is one thing and enjoying the print as a work of art to best advantage is another. The two do not seem to go well hand in hand.

A third topic, bearing casually upon both signatures and margins, is that of 'states.'

Just as the niello engraver took trial impressions of his work to better control the state it was in, the line engraver pulls trial 'states' of his plate. He can thereby see plainly what is still missing, or whether any

Digitized by Google

portion has been over-elaborated, this also being a fault which can be easily remedied, as has been explained on page 29. Such trial proofs, pulled from the unfinished plate, are very scarce among old prints, for naturally engravers, after having used them as a guide, would throw them away. Among the earliest examples two of Dürer's might be mentioned which are particularly interesting, because they show his method of working. He did not keep the plate in any kind of tone whatever, but would elaborately finish, for instance, an upper arm, while the lower arm was still left untouched, excepting a mere outline. There is another kind of 'state' which is quite common, however, even in the earlier fifteenth-century prints. When a plate had become worn, and only grey, weak prints could be pulled from it, artists would often touch it up with the burin, strengthen the worn outlines, and put in new bits of modelling where the old had waned. Some masters—Israhel van Meckenem is one among the early engravers—made quite a practice of this, retouching a plate again and again, as soon as it was worn. There is yet a third kind of state, the existence of which is due to the collector. No sooner did engravings become numerous than collectors must have appeared, and they united discrimination with their taste and love of prints. They knew that an early copy of a print was better than a late one, and they wanted to be sure that the copy they bought was one of the first printed. Engravers presently gave them a guide towards the establishment of priority of impression. They would print, perhaps, fifty or a hundred copies of a plate, and then add a monogram. A second set with the monogram would be printed, slightly inferior to the first, and then perhaps the date, or some lettering, would be engraved. A third

Digitized by Google

set would be printed, whereupon some slight addition, a couple of leaves, an extra bit of shading, or something of that kind would be added. Now the plate would begin to show wear distinctly, and a new set, with further additions, would be decidedly inferior to the prints taken before. Presently the plate would have to be retouched altogether. The collector loves to have a copy out of the first set, not only because it is better than one out of the others, for in some cases a copy out of the second set will be quite as good as one out of the first. But the number of impressions taken of each set will increase as a rule largely; for example, a man would print, perhaps, twelve copies before making the first addition, fifty before making the next, two hundred before making the third, and so on. Now, a collector would much rather have something that only eleven other people in the world own, than one that is in the possession of fifty.

We can make out a schedule for 'states' of engravings during the fifteenth and sixteenth century. Of course, no one print will run through all the list; it rather covers all possible cases.

1st state.—Different trial states, before the plate has been finished.

2nd ,, Before signature or lettering.

3rd ,, Before date or lettering; sometimes before the number, if the plate happens to be one of a series.

4th ,, Before additions; there may be different states, as often as new additions are made; the last would be

5th ,, Before the plate has been retouched, and this retouching may recur several times.

Digitized by Google

To this list the seventeenth century, roughly speaking, adds four more:

6th state.—Before address of publisher.
7th ,, Before the address has been cancelled.
8th ,, Before the addition of the address of the new publisher. Plates are often sold or inherited long after the artist is dead; the new possessor will cause a new edition to be printed, and have his address engraved upon the plate.
9th ,, Sometimes the plate has been cut down to a smaller size.

I repeat that the reader must not imagine any one plate to have gone through all these states. Some engravings of Beham, for instance, are extant only in the states 2–5, no copies of trial proofs, or of prints with address, &c., being known. Some Italian plates will only be found in the states 6–8. For mezzotints the schedule would be:

1st state.—Before all lettering.
2nd ,, Before lettering—i.e. the names of the artists, and sometimes the title of the picture, merely scratched.
3rd ,, With the lettering engraved in full.
4th ,, With the address of the publisher.

Again, hardly any mezzotint will be found to have run through the whole list.

It is only during the middle of our century that line engravings were run somewhat regularly through a system of states, and here it is:

1st state.—Trial proof or proofs of the plate as 'forwarded by etching.' (This technical term will be explained later.)

Digitized by Google

2nd state.—Proof of the unfinished plate: also trial proof.
3rd ,, Finished proof.
4th ,, 'Remarque' proof, perhaps 5–10 copies; some little design, called a 'remarque,' is engraved upon the plate margin.
5th ,, Artists' proofs, before all lettering: the 'remarque' has been polished off.
6th ,, Before lettering—i.e. before title of picture, only the names of the artists are engraved upon the lower margin.
7th ,, With open lettering.
8th ,, With lettering filled in, or solid.
9th ,, With address of publisher.
10th ,, The same on common paper. 1–9 are usually printed upon extra India or Japan paper.

There are line engravings made during our century which have been pushed through *all* these states.

It is in etching, however, that the question of states is most important. The art of etching is, as we shall see later on, a good deal more mobile than line engraving, and requires more trial proofs to control its progress. Again, even after he has finished his plate for the time being and printed an edition therefrom, the artist will be more likely to return to an etched than to an engraved plate at some future day and alter it. For in engraving there is, so to say, a definite goal: when this is reached every alteration will cause the plate to deteriorate. A finished etching may be changed without either spoiling or improving it.

The remarks upon signatures, margins, and states apply, of course, partly to all forms of intaglio printing; in fact, we had to anticipate and mention subjects like

Digitized by Google

mezzotinting, etching, &c., that are to be explained later on. They were inserted under the heading of 'Line Engraving' only for convenience sake.

After this digression, let us return to the progress of line engraving.

We had proceeded as far as the time of Master E. S., who had already developed engraving up to a stage where the qualities of the burin were displayed to advantage. Schongauer, who brings the fifteenth century to a close, roughly speaking, is the first great and universal genius of the north to avail himself of the new art in order to express his ideas. He shows what possibilities lie latent in engraving, and in him there appears for the first time a fair rival to the Italian artists. His work may not be quite as harmonious as theirs, but it is impressive, and he successfully grapples with difficult problems such as psychological expression.

Dürer stands upon his shoulders, has profited by his experience, and he, we may say, brings the art of engraving to perfection. Whatever improvements engraving may be considered to have undergone after his time, we can discern traces of them at least in his prints.

The principal development still in store for burin engraving lay in the direction of 'colour.' This, the usual term, is rather misleading, as no reference to different colours—such as green, red, blue—is intended. What is meant, rather, is that the line engraver learns how to give an impression of the colour peculiar to the object he presents. Down to the beginning of the seventeenth century this quality is missing. Almost all prints that were engraved before that period, especially the Italian ones, display a uniform gray tone. Light and shade are well distributed so as to round the modelling sufficiently; we may be able to detect that a man's hair is

Digitized by Google

lighter than his coat, but we do not receive a colour impression of each, and we cannot discover what the coat may have been made of. This is really the vital point, and 'texture' would be a better chosen word than 'colour' to characterise the new style of engraving, as it would specify that engravers now succeed in engraving a face so as to look like skin, a coat to look like wool, or a dress to look like silk, not, as before, simply making one object lighter in tone than another.

Two prints, at least, by Dürer, the shield of arms with the skull and the shield of arms with the cock, show this texture quality admirably, especially in regard to the polished steel helmets. But the ability to command it did not become general before the time of Agostino Carracci, of Cornelis Cort, and particularly of Hendrik Goltzius, who with his pupil De Gheyn were very successful in attaining this effect.

The art of conveying texture is almost reducible to the use of the swell line. Every engraved line must, by nature of the process, run to a sharp point at each end. During the first stages of the art the increase to its average width was so quick as to be hardly capable of being detected with the bare eye. Subsequently a virtue was made out of this necessity, and the line now slowly increases in width and depth from the point at which the burin attacks the copper, visibly swelling to a size considerably beyond what was formerly customary, then decreasing again to a point. I have already stated that such a heavy line is not only stronger and blacker, it is also more brilliant. Since texture, as far as our eye perceives it, seems to depend largely upon the greater or less degree of glossiness of the object, the artist by cleverly manipulating with brilliant and dull lines, as the occasion

Digitized by Google

may require, can produce texture in plain black and white.

Unfortunately, the field for line engraving was enlarged in this manner at a time when taste and design were beginning to deteriorate. Consequently we do not enjoy the early examples of the new style, even though we at once recognise its fine qualities. The case is the same as when we compared fifteenth-century engraving in the north with that of the south. Although we had to admit that greater skill in handling the burin rested with the northern artist, still we found it difficult to take any delight in his productions because his powers of conception and of drawing were not such as could appeal to us. It is not before the time of Louis XIV. that we meet with the best 'colour'-line engravings—in short, we may say the best engravings. At his court a school of portrait engravers arose which can boast of such names as Nanteuil, Masson, Edelink, Drevet, and many more, who produced most marvellous work. Most of their likenesses are busts, nearly life-size, in which we do not know what to admire most, their happy facility of characteristic drawing, the wonderful ease with which the artist plies his burin, as if the copper offered no resistance at all, or the consummate skill with which he reproduces satins, silks, armours, furs, and all other textures. This is the classical period for line engraving, and if ever any rules of working should be set up for it, they must be based upon an examination of these men's work.

From that time onwards, despite the many individually good masters who have appeared from time to time, the art as a whole steadily declines. It became a matter of schooling and of authority. When masters of such excellence and of such fame arise, the younger genera-

Digitized by Google

tion intuitively come to them and want to be taught. But few persons, if any, can teach an art. They cannot imbue the pupil with the spirit that was upon them when they laboured until their results were attained. They can only place the results themselves before the pupils, and perhaps formulate rules. When an art is once bound down by rules, when its development is no longer based upon a steady influx of fresh individual conceptions, it needs must decline: for the soul of the rules soon vanishes, and nothing but a skeleton remains.

In the case of line engraving this skeleton was the manner of crossing one system of lines over another. What originally constituted only a means came to be regarded as an end, and the late-comers take keen delight in curving a line backwards and forwards in a most complicated way, in laying one set of lines neatly and cleanly over the first, in greatly increasing the swell of the line, in consequence of which the work becomes wiry and empty—in short, in falling into every error and mannerism that they could possibly fall into. In such a print the lines have lost well-nigh all their expressiveness, and the whole plate is covered with an obtrusive set of 'lozenges' formed by the crossing of two or more sets of lines. The engravers found it wearisome to engrave the deep swell lines, so they 'forwarded' them by means of etching—that is, they etched them first to considerable depth and then only went over them with the burin. By this fashion the burin line again lost some of its character, for an etching needle is handled differently from a burin, and even when gone over afterwards with the graver, the true burin quality cannot be entirely attained.

In addition to all this, line engraving came to be

Digitized by Google

altogether a reproductive art, and while the original engraver can please himself in every way by choice of subject, arrangement, manner of work, the copyist is hampered at all turns. He is under the influence of the painter he copies, and possibly even of the publisher who commissions him. He who, to begin with, possesses less genius than the creative artist, has in addition more difficulties to cope with, and consequently his work must be doubly inferior.

It has always seemed to me that about the lowest stage line engraving ever reached (of course I consider only such works as claim to be of the highest order) is exemplified by the set of plates after the Allegri (Correggio) frescoes at Parma. They were begun tolerably well by Toschi; but the latest, published after Toschi's death by his pupils, are truly bad.

Before continuing the story of line engraving, I must in a sort of parenthesis make mention of two men who stand a little aloof from the general development, each one having a 'style' of his own. These men are Claude Mellan and Jean Morin, both of them contemporaries of Nanteuil. The former fell into the habit of working altogether without crossing lines. Where deep shadows were necessary, he did not heap lines, either parallel or crosswise, but simply distended the few he used. At some distance the effect occasionally is good and the modelling successfully achieved. Near at hand, at ordinary arm's-length even, the effect is unquiet and mottled; the mannerism of it all comes out clearly, when we see that these lines suddenly increase and decrease as abruptly, without having their course affected. Of course this is a most unnatural way of using the burin, and the work looks empty and gray. Mellan attained the height of

Digitized by Google

mannerism when he combined this system of modelling with the use of a single line. The line is of course a spiral. It begins—the plate is an 'Ecce Homo'—on the tip of the nose and suddenly swells out wherever the modelling requires dark shading. This line he could not work uninterruptedly, as one may draw a spiral with a pencil. He engraves a more or less uniform spiral first, and puts in these patches of shading afterwards. The use of this artificial rather than artistic spiral style of engraving fortunately remained very limited, and I know of only one man, the German Thourneyssen, who imitated Mellan.

Morin's work, on the other hand, is quite delightful. His can hardly be called a distinct style, however, as it does not consist of a new way of using the tools. It is based rather on the extended application of dots. Burin dots—not round, but infinitesimally short lines when seen through a magnifying glass—have, by the way, been used in combination with lines almost ever since engraving was first practised. Campagnola, a Venetian artist of the fifteenth century, engraved plates altogether by means of such dots, and Delaune, a little later, used burin dots to express the figure of God in his illustrations to Genesis, thereby giving Him an aërial supernatural appearance. These dots have nothing to do with stippling, and it is a mistake to cite Campagnola or Delaune as precursors of Bartolozzi; for in stippling the mordant is an essential feature, as we shall see in time. Morin's dots, short hatches, and whole line system enable him to produce an excellent chiaroscuro.[1] His portraits make a different impression upon us from those of all his contemporaries,

[1] A good deal of his work is etched, by the way, but the character of line engraving is preserved.

Digitized by Google

but, as before stated, this is rather in consequence of his individual way of looking at nature than of his individual handling of the graver; in other words, they are different in conception, not in style.

The general decadence of line engraving, of which we were speaking, extended well into our century. It was hastened and accentuated, so to speak, by the decadence of all the fine arts which took place during the first part of our century, in consequence of the French revolution and the wars. When countries are reduced to poverty, art of course cannot thrive, and it is a truism to say that it needs money. We really have no right to declaim against the poor taste prevalent in those times. Our forefathers would have had better taste if they could have afforded it. But what we may exclaim against is the strange conservatism of people of our own day who pretend to uphold that taste, who wish our modern art to be subjected to its rules, whereas dire necessity, and not free choice, was at the root of the matter. To this period we owe two new 'styles' of line engraving. But these so-called styles do not involve any new principles, other than those of omission. The earlier is called 'outline engraving,' and is amply characterised by its name. All figures are represented in outline only, and the modelling is limited to the most primitive and conventional indications. People can be found to this day who profess to take pleasure in looking at such prints, and praise their originators as great artists. However, it cannot be doubted that the only reason why those artists engraved in outline was because they had not sufficient schooling in drawing or modelling to do a plate of a higher order. The practice was common to a large extent in Germany; as soon as better times set in, none but the thoroughly incompetent men, such

Digitized by Google

as M. Retzsch,[1] author of the excruciating illustrations to Shakspere, &c., adhered to it. Flaxman, David Scott, Piroli, Frank Howard, are other artists well known in the field of outline engraving; some of them did not engrave *propria manu*, but drew the design, which any inferior artisan could *facsimile*, on copper.

As soon as times improved a little, and artists could afford to devote a sufficient number of years to study; as soon also as they could attempt to do more careful and elaborate work because the increasing prosperity of the public reopened the demand for it, they straightway abandoned outline engraving and sought to produce work of a better quality. We do not get anything good at once; still we do get something better, which is known by the name of 'cartoon engraving.' It is only a step or two in advance of outline engraving, in the direction of better drawing and fuller modelling. But it does not go very far, and does not come within measurable distance of 'texture' work.

The 'cartoon' engravers of our century have always flattered themselves to the extent of believing that they had a right to claim Marcantonio Raimondi as one of themselves. There is a certain degree of resemblance, for he too knew not how to reproduce tone and texture.[2] But while Raimondi could look back at all the work done in his country before him and proudly maintain that his own was the best, and that it represented the highest stage in the art so far developed in Italy, how badly must the modern 'cartoon' engravers have felt when they

[1] This able genius had not even learned such a little thing as using the burin to engrave outlines, and his designs, although drawn in what he considered the strict engraver's style, are etched. I doubt whether he knew enough to be able to do the biting himself.

[2] The principal reason to account for this is, no doubt, the fact that he reproduced monochrome models.

Digitized by Google

glanced from their plates to hundreds and hundreds of those done before them! They comforted themselves with the reflection that the grapes were sour. According to them, the cartoon style is the more rigidly artistic one after all, and to be severe is a higher ideal than to be pleasing. They certainly managed to avoid pleasing, but their severity is only stilted. It would have been wiser for them to have admitted their inferiority and to have striven to mend it as soon as possible, instead of propping it up as something good, chosen by their own free-will, and an ideal to be followed ever after. For really it was not their fault that misfortunes due to the period had set the whole art back again into its infancy, and that they represented merely the Renascence of an early more or less imperfect stage. The 'cartoon' engraver is even less to blame, from the fact that he is not his own interpreter, but is entirely dependent upon the 'cartoon' draughtsman.

Students of the history of art during the present century, that strange period in which all stages that have ever been gone through are hurriedly and briefly rehearsed over again, well know that there was a time when artists' brains were stimulated to the conception of grand ideas, while their hands were not provided with any but the most insufficient training. It was the period, even now not so very remote, during which 'the idea of the whole' was deemed the essential thing in art, whilst matters of perspective, of correct drawing, and the proper use of oils and brush, were considered of secondary importance, if not altogether irrelevant. The artist then could shake hands with the faith-cure doctor as with a brother, since he manipulated without having learned to use the tools and rules of his profession. The technique of oil-painting

Digitized by Google

was altogether beyond—or, as he thought, beneath—him, so he took to drawing huge black-and-white cartoons; sometimes they were slightly tinted, but never painted. Size and the literary explanation pinned to each picture had to make up for the absence of all æsthetic qualities. How should the poor burin engraver, when doomed to reproduce such creations, be able to make anything enjoyable out of it?

Outline and cartoon engraving were not practised extensively in England, but they found a ready market there. Some works—for instance, Maclise's 'Norman Conquest,' produced under the supervision of Gruner, were made exclusively for that country.

There is a third, perhaps even more odious, form of engraving prevalent during the first half of our century—this time especially in England. I mean steel engraving. The principles of work remain the same as before, the modifications of style depending solely upon the excessive hardness of the steel plate as compared with copper. All freedom and lightness of hand, which burin engravers had acquired slowly from century to century, were lost at a blow, and the character of the work is one of stiff and inartistic exactness. In order to get ahead at all with the work, mechanical machines were used to engrave sky, grass, water, and other 'less interesting parts' of the plate, as they were called. Of course the result was constrained, very tidy and accurate, and very insipid. Steel engraving was employed mostly for cheap landscape work and for an inferior kind of book illustration. Occasionally expensive publications were 'adorned' with them. They always look shallow and meagre; the only thing that could ever be adduced in their favour is that an endless number of impressions could be taken

Digitized by Google

without wearing the plate. In our own day this advantage has been secured for copper plates by means of steel-facing, and thus steel engraving has lost its sole claim to attention.

We may add still another cause of the decline of line engraving, over and above those already specified, which is the growing popularity of etching ever since the beginning of the seventeenth century. Etching being a more mobile process and one which requires, perhaps, more talent, but on the other hand a good deal less application and time than line engraving, succeeded after a time in wholly captivating the original artists. Except where a certain kind of delicacy that line engraving alone possesses was required—as, for instance, in the magnificent vignette illustrations of the last century—all creative artists would prefer to realise their ideas by the aid of the subtle and ready point. Thus the further progress of line engraving depended upon the lesser kind of artists, who did not originate any ideas, but only interpreted those of others. They fell back largely upon the pictures of the Renascence, and reproduced Raffaello Santi's paintings with especial ardour. Some of the Madonnas were done over and over again, each plate serving as a sort of criterion to show whether its maker was superior to the man before him or not. Thus even the choice of subjects tended to estrange the engravers more and more from living art, and on the point that they became artificial and poor we have already laid sufficient stress.

If we are compelled to admit the deterioration of the art, we must also admit that it has received its fair share of abuse. Almost every English artist who within the last fifteen years or so has published anything upon the

Digitized by Google

subject of black-and-white art has cast his stone at the engraver. Seymour-Haden and Hamerton were, I believe, the first to begin, and by the time they had done with him there was hardly anything left for the rest to pick to pieces. When any of these writers condemn a thing as bad and unsympathetic, they seem constrained to add the words 'contrary to the engraver's idea.' They are quite certain that line engraving is a poor thing, and seem to believe that the painter-etcher is in sole possession of the secrets of true art. In order to be quite sure of this, they very coolly claim the mezzo-tinter and dry-pointer as belonging to their side. It seems to be altogether forgotten that there were painter-engravers long before the painter-etcher was ever heard of, and that they in their day produced works equal to any etcher's. Apparently, then, the process should be a little more than 'cold, classical, and proper.' After all, it is absurd to condemn an art simply because its later interpreters were mannerists.

Fortunately, the prejudice against line engraving is waning among artists of our own day, and the process is beginning to raise its head again. Two resurrections have taken place simultaneously, in France and Germany. In both cases somewhat of a hybrid form is the result, plainly designated as such by the new name, 'Graver-etching.'

Irritated by the conventional and empty lozenge method in vogue among recent engravers, Stauffer-Bern, in Germany, threw all the attainments of line engraving, good or bad, overboard and used the graver in a practically new manner. He engraved only very light, shallow lines, which required very little pressure, and consequently left his hand free to guide the

Digitized by Google

burin in almost as arbitrary a manner as the point. These lines are not arranged on any set principle, but the direction may always vary whenever the form of the object depicted requires it. The lines, moreover, are so delicate and so close together that they blend into a tone very easily. The result is a sort of midway step between an engraving and an etching, some of the metallic quality of the burin line being preserved, while as far as conduct is concerned, the line possesses some of the etcher's freedom. To a sensitive eye, I believe this will always remain a combination of two heterogeneous elements. It has opened the way to a dangerously high grade of modelling, and tempts the artist to discard line and aim at realism. It is significant that Stauffer was at heart a sculptor, whose main ideal was always perfect modelling. This ideal he carried also into black-and-white art. The same is the case with Klinger, who may be cited as the principal artist who followed Stauffer's method of engraving.

The French revival of line engraving, led by Gaillard, comes practically to the same thing. With him, however, there is hardly any effect of line left, and it is all tone. By heaping up excessively minute hair-lines, much shorter even than those of Stauffer, he produces plates which at times unfortunately approach photogravures, and the lines themselves can be distinguished only after close scrutiny.

These methods rest upon the invention of steel-facing. A copper plate engraved in such a delicate manner would wear out after less than twenty-five impressions, perhaps. Steel-faced it may be printed over and over again practically without a limit, for as soon as the steel-face should wear off, the plate can

Digitized by Google

be again immersed in the electrotyper's bath and a new coat of steel be deposited. Thus it is now the case that engraving in such a manner can be made profitable, while formerly no artist could well attempt it, even if it suited his inclinations; for the elaborate and difficult undertaking would not realise enough to pay him for his pains.

There is a third revival of burin engraving which I consider to be of more promise than the others, though it has hitherto been conducted only on a very limited scale. It is based upon a variation, or improvement rather, of the burin. The instrument is made with its cutting point turned back; consequently, the engraver while at work does not push it, but pulls it towards himself. The quality of the burin-line, its brilliancy, and its faculty of reproducing texture are perfectly preserved, while there is a great field for development in the matter of its direction. Direction was, as we saw, just the weak point of the later engravers, and they had fallen into a mannered system. When a man pulls a graver, he naturally would handle the instrument in a different manner from when he pushes it, and plainly a new style may be formed upon this basis.

Compared with woodcutting, the art of engraving upon copper has always been considered as of a higher order. It will be remembered that engravings were signed earlier and oftener than woodcuts, which alone goes to prove that the artist thought them a higher form of art and worth claiming. Again, it will be remembered that the actual woodcutting was very soon assigned to artisans, who needed not a shadow of draughtsmanship, let alone creative power, to become expert in their work. This

Digitized by Google

was not the case in engraving, for the engraver, even when he did a plate the design of which was not his own—in other words, when he reproduced the drawing or painting of some other artist—had always to recast this prototype into a linear design, so as to be able to engrave it with the burin, and this was a piece of creative draughtsmanship.[1] I believe it was only during the short period when art was at its lowest stage that the engraver sunk down to the state of a mechanic, and needed someone else to draw the design upon his plate. Then, of course, he had only to dig out the prescribed lines, and was no more of an artist than the woodcutter just mentioned. That such plates and such men should be thought much of even to our day is an extraordinary anomaly, truly to be lamented. There are 'collectors' who will pay £100 for an impression of Fr. Müller's Sistine Madonna. Müller was gradually growing insane while working the plate, and so it is not altogether his fault if he did not make an enjoyable thing out of it. The drawing was done by a lady, Crescentia Seydelmann, who copied pictures now and then in an amateurish way, with more or less talent. This combination of a dilettante's and a sick man's work was puffed up by littérateurs and so-called connoisseurs; it floated furthermore upon the fame of the original painting (dependent in like manner not altogether upon its artistic qualities), and so great is the conservatism of a certain class of people that they are still overawed by its traditional reputation.

As a means of illustrating books, engravings on copper (including all the different forms, such as etching,

[1] The modern wood engraver ranks, of course, in this respect with the engraver on copper.

Digitized by Google

&c.) could not well come into competition with woodcutting, on account of its expensiveness. Woodcuts are set into the type and printed along with it. Engravings must always be printed separately, of course, and would be very seldom set in amongst type, because the unsized paper that is good for printing engravings is not the best thing on which to print type, and *vice versa*. However, there are, of course, a large number of books with engraved illustrations, the most interesting group being, perhaps, the editions of famous novelists and dramatic authors published in France between 1650–1750, and the host of pocket calendars published during the eighteenth century.

In the course of this chapter — which, strictly speaking, should have dealt only with line engraving— etching, mezzotinting, and other kinds of intaglio prints have been often mentioned, whenever topics have been under discussion that applied to all alike. For that matter they are sometimes spoken of collectively under the general name of 'engraving.' The next thing in order will be to take up all these methods individually. Taking them up in the order of their importance, etching comes first.

Digitized by Google

CHAPTER IV

ETCHING

IN etching a natural agency is called in to assist the human hand in producing the work of art.

The etcher takes a copper plate, well hammered, planed, and polished, just like the one used for line engraving, and covers it with a 'ground.' This 'ground' consists of a mixture of white wax, gum mastic, and asphaltum. There are many recipes for making the mixture, the important thing being that it should contain some component which will effectually resist the action of acid: it is worked into a ball when hard, and kept in a piece of thin taffetas silk. When the silk is passed over a heated plate the 'ground' melts through, and may be dabbed evenly upon all parts of the plate, so that its whole surface is covered with a very thin film of 'ground,' which is left to dry upon it. The ground can also be mixed with oil of lavender to form a paste, and then be spread upon the plate by means of a roller. The oil of lavender is expelled afterwards by gentle heating. While laying 'grounds' etchers must take good care to have their plates absolutely clean, and see that no dust be flying about. When dry the 'ground' is still transparent, and it would be difficult to see any work done upon it. To obviate this, the ground is made black by smoking it over a taper.

Upon this black and shiny surface the etcher draws

Digitized by Google

his design, or at least a sketch of it, with pencil or sanguine. Of course, designs may be transferred upon it in any of the ways that have been described under the heading of 'Line Engraving,' and of course all designs must be reversed.

Now the etcher takes his needle or point, which is something like a common sewing needle set into a wooden handle, or any sort of a metal bar running to a point that can be variously sharpened. With it he goes over all the lines of the design, removing the ground, but not pressing hard enough to scratch the copper itself. After all lines have been gone over, the complete design will show in shining red copper colour against the black ground. The back and the edges of the plate are then covered with Brunswick black or some other varnish which protects the copper from the acid in the same way as does the 'ground,' and the plate is immersed in a shallow dish made of glass, porcelain, or hard rubber, and filled with a mordant. There are many different mordants, the commonest being nitric acid diluted with equal parts of water. Nitrous acid, about ten parts of acid to nine parts of water, is said to bite more slowly and to work more evenly. Chlorate of potash and hydrochloric acid strongly diluted with water, called the Dutch mordant, is considered by many to be best, as it bites very slowly, evenly, and downwards, while the other mordants, especially nitric acid, have a tendency to get in under the ground and widen the line, whereas they should only deepen it. Besides, with this Dutch mordant, no fumes arise during the biting.

The acid slowly eats away the copper in the lines which the needle has laid bare, thus enabling the etcher to dispense with the laborious task of digging out the

Digitized by Google

furrows. The length of the biting is determined by many factors, primarily by the quality of the copper and the composition of the mordant. In a warm room the acid bites more rapidly than in a cold one. Open, broad sketchy work bites more slowly than work filled with much close detail, as in the latter case the action of the acid is quickened by the chemical heat developed during the biting. Except when the Dutch mordant is used, little bubbles arise wherever the copper is being eaten away, and must be removed with a soft brush. The quantity and size of these bubbles aid the etcher in determining the speed of the biting.

When the furrows have been bitten sufficiently deep the plate is taken out of the bath, rinsed with clear water, and dried, and the 'ground' is removed with a rag and turpentine. And now, if the etching is one of the simplest kind, and if each step in the proceeding has so far been successful, the plate is ready for printing, which is conducted on exactly the same principles as the printing of a line engraving. Printing an etching, however, is a much more difficult affair, as more is left to the judgment of the printer. When printing an ideal line engraving the printer should wipe his plate in such a manner that the ink is held by the furrows only, and not a vestige of it remains upon the surface of the plate. The art of etching is greatly aided by the employment of a printer of good taste, to heighten its effect. He may wipe parts of the plate less clean than others, and may leave a faint suggestion of ink upon the plate over and above that which is held by the lines. How much to leave and where to leave it are matters of judgment, and in this *retroussage* the fine printer distinguishes himself from his colleagues of poorer taste. One way of getting a printer's tone is to wipe the

Digitized by Google

plate quite clean as if it were an engraving, then pass a hot, very light piece of cloth over it. This draws a tone on to the surface of the plate from out of the ink-filled furrows.

Whereas the implements of line engraving—burin and copper plate—have remained unaltered ever since their invention, the working material of etching has undergone some changes in the course of time. Upon the whole, however, such alterations have rarely come into general use.

Black 'grounds' have been invented, which rendered the smudgy and by no means very easy process of smoking a plate superfluous. Liquid grounds have been brought upon the market, by means of which a plate can be covered in much less time and more evenly than by the dabbing process. The liquid 'ground' consists of common 'ground' dissolved in chloroform, and the etcher operates much like the photographer when developing his negative. The difficulty of uneven biting is probably more or less unremediable, since it is the result of the chemical heat as above stated: still, mordants have been invented which profess to lessen this difficulty. Another matter that troubles the etcher, especially at the beginning, is that he cannot easily control his work whilst etching, because it is negative. That is, the lines are light, as the bare copper shines out at him, and the background, in this case the etching 'ground,' is dark. Since we are all accustomed to exactly the reverse whenever we draw, our pencil or ink lines being black upon white paper, this is at first very disturbing. The amount of work done always appears much larger than it really is, and each individual line appears wider. Many attempts have been made to remove this difficulty and make etching a positive process. The plate is

Digitized by Google

silver-coated, and the ground covered with some sort of whiting instead of being smoked. The acid turns the silver black, but the whiting must be of such a composition as to withstand the effects of acid. All such grounds are difficult to prepare, and they are very liable to injury. As a matter of fact they are, as a rule, used by amateurs and scarcely ever by famous etchers. The professional artist very soon comes so thoroughly into touch with his work, in the course of his daily practice, that he does not need any of these makeshifts.

Finally, it may be mentioned that instead of immersing the plate, after back and edges have been protected, in a bath, the plate itself may be converted into a bath by simply placing a ridge of wax to the height of an inch or less all around the edges and pouring the mordant directly upon the plate.

Line engraving was learned from the goldsmiths: etching from the armourers. The practice of ornamenting guns and arms with etched ornaments is a good deal prior to the oldest printed etching that we have been able to find. This is, by the way, a girl bathing, etched by the Swiss engraver and woodcutter Urs Graf, in the year 1513; Dürer's etchings must have been done about the same time. These prints were etched on iron, and were bitten only once. The line is very vigorous and strong, of one width throughout, and the prints somewhat resemble a powerful woodcut, though they are freer in drawing. It was not, however, before the proper mordant for copper had been discovered—which must have occurred about the time of Dürer's death—that the practice of etching became more general. One of the earliest interpreters is Augustin Hirschvogel. He was

Digitized by Google

one of the second generation of the so-called 'little masters'—a man of numerous talents and adventurous life. In his landscapes he evinced a fine feeling for the proper province of etching—suggestiveness. The deft and capricious point, so prone to work lightly and ever ready to stop, so much the opposite of the heavy, sturdy burin, which once set in the copper is loth to leave it, must have led him to this understanding. Some of his work is not altogether unlike the delicate feats of that most modern artist, Whistler. A mere breath of a line suggests miles of distance in the background, the sum total of lines is reduced to almost the lowest point. However, it is only in a few cases that Hirschvogel has been so successful—his treatment of detail in the foreground is generally not so good.

This one element of style proper to etching, then, was recognised and developed quite early. Another element almost as important as suggestiveness was first noticed and elaborated by Jacques Callot, who to this day remains one of the best masters of the art of etching. He found that the technique of etching enabled him by special means to introduce tonality into his print.

If a plate be etched altogether with one needle and it be bitten once, all the lines will be of equal strength. This would spoil the majority of designs, since we usually require lines of different gradations; for instance, fine, delicate ones in the perspective distance, heavy ones in the near at hand foreground. To a certain extent the use of variously sharpened needles will bring about the desired effect, but only to a very limited degree. The true way of attaining it is easily explained, but not easily carried out.

Digitized by Google

Suppose things so arranged that five minutes' immersion in the acid bath will suffice to bite all the lines slightly. The plate is then taken out and the etcher carefully covers—'stops out,' as he calls it—all such lines as are already sufficiently heavy, with a brush and Brunswick black. These being now protected from further action of the acid, the plate is again immersed in the bath. A further biting of five minutes will strengthen all the other lines, until a second set must be stopped out; and so on, until at last the heaviest lines of the foreground are bitten.

Of course, this process of 'stopping out' is very difficult, as naturally all lines of one order of thickness are not close together, but occasionally scattered all over the plate, so that consummate skill and judgment are necessary in protecting them without covering up lines that ought to bite longer. Again, the contrast between the different sets of lines must not be too great, or else the plate will look blotchy, especially after a fair number of prints have been pulled. Some artists have consequently tried to devise methods by which one could avoid the difficulties of 'stopping out.' One of them is to proceed in the reverse order; that is, draw first only the heavy lines of the foreground and let them bite, say, five minutes. Then take the plate out and draw a second set, which in the end are to be a little lighter. Let them bite five minutes; meanwhile the first set will have been bitten ten minutes, and so on until the last and lightest sets of lines have been bitten, the first set having been open to the action of the mordant all the while. However, new difficulties are introduced which are hardly less troublesome than those obviated. The whole of the design, with every bit of shading, must have been drawn upon

Digitized by Google

the plate before any of the biting commences, and the artist is tied down to exactly what he has drawn. He is not free to add improvements or alterations while at work, but is in a way reduced to faithfully copying his own work. All work of correction is more difficult, and it is harder to control the work as it proceeds. There is another method by which a most perfect gradation of line may be accomplished, and that is working in the bath. The plate is put in the bath and is left there all the time as long as the needle works; the needle, of course, lays the heaviest lines bare first, which continue biting all the time until the last lightest lines are set in. The acid eats away the needle too, but it is kept sharp. The difficulties of working in such a manner are all apparent; no corrections can be made at all, and the work cannot be controlled. It goes without saying that only comparatively simple plates can be etched in the bath. After all, these methods of avoiding the practice of 'stopping out' may be considered rather as the special hobbies of individual artists, and have never been widely spread so as to replace the old standard manner of working. In order to control his 'stopping out,' the etcher has to resort to the taking of a good many more trial proofs than the engraver, and in trade a good deal more importance is attached to states of etchings than to states of engravings.

The proving of an etched plate presents some new difficulties, as the 'ground' naturally must be removed before each printing takes place, and it is not easy to lay a new 'ground' on an already bitten plate. To do this, dark etching ground is made into a paste by being mixed with oil of lavender, and this paste is evenly spread upon a roller, which is drawn lightly over the plate. Pressure

Digitized by Google

must be carefully avoided, for this would force the ground into the furrows, and thus prevent the mordant from acting upon them further.

For original work etchers generally find from three to five trial proofs to be sufficient, seven to eight being considered a large number. The elaborate large 'Reproductions,' done in our days by men like Waltner and Koepping, after old oil-paintings, require a good many more. Some of Koepping's etchings are extant in as many as twenty-two states. Attention has already been called to the fact that these states of etchings are important, and generally very much sought after. It often happens that an artist etches a plate to a certain state, pulls a few proofs, and then thinks he may alter the plate to advantage. Sometimes he succeeds, sometimes the acid or something else goes wrong, and he does not succeed. Consequently those few proofs have now become very valuable. In all cases their limited number gives them especial value in the eyes of the collector. The connoisseur often likes them the better from the fact of their being more sketchy and suggestive than proofs from the finished plate.

The process of 'stopping out' introduces atmosphere to a remarkable degree into a picture, and enables an artist to set a hazy distance into its proper tone. This feat was accomplished marvellously well by Callot in his 'Pont Neuf.' Claude Gellée, who as an etcher seems to me to be far greater than as a painter, repeated it successfully. In our own days Meryon is its greatest master, and out of a number of his works the Abside of Notre Dame may be cited as a wonderful instance of an atmospheric plate. But for that matter, many more, if not all, great etchers have succeeded in this respect, and all have, at

Digitized by Google

some time or other during their career, found it to be a fascinating problem.

In our own days there has been a reversion from the system of frequent 'stopping out,' and some of our best etchers do their plates in a single biting—in two or three at the most. A new and third trait has been found to be essential to the character of etching. It has been recognised as the art of line *par excellence*. In the delicately designed and cleverly toned work which is attained by means of frequent 'stopping out' the quality of the line as such is almost entirely ignored.

Etching seems an excellent means of exciting man's inventive faculties. Almost all etchers have made a few or more experiments and have hit upon some speciality, some trick of their own to aid them in bringing about desired effects. Sometimes the artists impart their discoveries to their pupils and to the world in general; sometimes they keep them secret. The method of working in the bath is one such 'speciality.' Here are two others. The artist draws his design upon the bare copper with a pen and ordinary ink, which is left to dry. The plate is then grounded, smoked, and immersed in water. This dissolves the ink, which upon sponging comes off with the ground above it. Thus the design is laid bare and the mordant can eat into the copper. The advantage over other methods claimed for this one is that it is positive, the ink being, of course, black upon the light copper. The great disadvantage, it seems to me, would be that pen-drawing is one thing and etching is another; and pen-drawing remains just as much pen-drawing if it be done upon copper as if it be done upon paper. The other process is quite similar in principle. An ink is prepared of whiting, white sugar, and ox gall. Using

Digitized by Google

a fine brush, the artist paints or draws his design upon the rigidly cleaned plate and lets it dry. Then a liquid 'ground'—common 'ground' dissolved in ether—is poured over the plate, and the ether expelled by gentle heating. Now put the plate in a bath of the Dutch mordant, and the ink with the 'ground' over it will be dissolved, whilst the other 'ground' grows harder. Then the plate can be etched and 'stopped out' in the ordinary manner. No doubt almost every etcher has at some time or other tried little variations of this sort, but in the end they all return to the classical method of working with the point upon a grounded plate, and 'stopping out' if it be necessary.

Compared with line engraving, etching has the advantage of being a quicker, to some extent an easier, process also. It has been said that whoever can draw can etch too, but this holds good only for a very simple form of the art, such as etching in outline. As soon as an etcher strives after proper etching qualities, he often finds great difficulties in his way, and acid or copper sometimes baulk him badly. He is even compelled to count a good deal upon luck. Etching is 'easier' only in so far as it does not require the long manual training which the burin engraver must undergo. But it is not easier from an artistic point of view, and the saying just quoted is foolish because of the fact that 'anybody who can draw' means, I suppose, 'anybody who can draw with pen, crayon, or pencil.' The etcher, however, must learn a new manner of drawing, governed by the conditions that the new instrument, the needle, imposes upon him. A simple pen-drawing, bitten in the copper and then printed, does not by any means constitute an etching worthy of the name.

Digitized by Google

The one fact, however, that etching evades the slow labour of the burin alone sufficed to make it the pet of the creative artist from the time of its invention. It, too, has gone through a somewhat similar history to that of 'engraving,' being employed as a means of reproducing first drawings, and then paintings, of other masters. It was often used side by side with line engraving upon the same plate. Again, it was made subservient to the burin inasmuch as it 'forwarded' lines which were later to be gone over wholly with the graver. But while line engraving as an original art may be said to have gradually fallen into disuse ever since the times of the French portrait engravers, etching as an original art always maintained its own. Ever since its invention, it was the process to which painters would naturally resort if ever they wished to make any attempt in black and white. For no other process within the whole field of printed pictorial art allows of such freedom of expression, hampers the artist so little, and enables him to infuse to so great a degree his personality into the work in hand. If we look at the plates of Nanteuil, Masson, and Edelink, we shall hardly be able to distinguish them in many cases, and we could not make any conjectures as to their character from simply studying the prints. How different this is in etching! We seem to be able to see the artist in his work. Mazzuoli's feeble mannerism, Guido Reni's unenergetic, colourless disposition clearly manifest themselves in their slipshod manner of working a plate. Salvatore Rosa's romantic spirit inbues his line with a wayward restlessness. Ribera's almost ferocious passion leads him to use the point with stern wilfulness. Tiepolo's *fin-de-siècle* heart delights in upsetting rules and contrasting shades where others would hardly venture to

Digitized by Google

contrast complementary colours. Van Dyck's dashing gaiety is apparent in that technique which boldly dares to stop at a moment when others would think that they had hardly begun. If we look over the three thousand odd prints of Hollar, we know better than from any written biography what a plodding, conscientious workman he was, one who always had to think of money even when buried ever so deep in his work. There is no dash about him; it is all sturdy earnestness, and yet it is good. On the other hand, there is none of this anxiety in the work of another man who did over three thousand plates, Count Caylus, every line of whose work breathes the amiable, eager amateur. Chodowiecki must have come from a small town, and must have lived in 'small' circumstances all his life; the way he etches every plate is documentary evidence to this effect. Again, the Dutch heroes of etching—very few of them heroes in real life—display, each one of them, so distinctly a character of their own. In short, we may go through the whole list of names connected with etching and we shall find that really no two men are alike: more than this, the artistic and even the human character of each one comes to the surface in his work.

Some readers may think that this must be the case in all forms of art, but I challenge them to look at all line engravings done after the Sistine Madonna with a view towards finding anything of the engraver's character disclosed in them. Let them try the same thing in all other forms of art, and I am sure that they will find etching to be in the end the one in which artists are most unreserved.

Rembrandt van Rijn—by almost universal verdict the prince of etchers—furnishes another example of this

Digitized by Google

fact. The extremely personal element in his artistic fancy, so inadequately expressed by the word 'clair-obscur,' appears most pronounced in his etched work. The development of this 'clair-obscur' is in itself most interesting, as being an ideal example to show how an artistic form is born. Rembrandt probably worked in an ordinary room. His keen sense of sight, undisturbed by all powers of association which go so far towards adulterating our sense impressions, must have noticed that the light in such an interior is lower than we generally assume it to be. For by the help of association we see objects in-doors plainer than out-of-doors, and recognise detail distinctly which, placed under an equal amount of light outside, would remain undefined. Rembrandt began by putting things into their real tone in interior pictures. Since he discovered a special means of reproducing this low, sombre tone, the result acquired a beauty of its own which greatly fascinated him. This led him to apply the reduction of tone values generally. The principle, which primarily was an effort in the direction of imitative truthfulness, was now reversed in being applied to out-of-door situations. Thereby it was at once changed from naturalism to style.

The special means which enabled Van Rijn to attain the chiaroscuro effect was the use of the dry point, upon which he fell back almost exclusively in later years.

Digitized by Google

CHAPTER V

DRY POINT

DRY point consists simply in working upon the bare copper, without the use of 'ground' or acid. No new tools are used, but the effect produced is quite new.

The copper, the transferring of the design, &c., are the same as in line engraving. Then an etching needle or diamond point is taken up, with which the etcher goes over all the lines of the design. In making the furrows the artist draws the point towards himself and presses rather heavily upon the copper. He does not dig out a shaving of copper, as with the burin, but simply makes a scratch upon the plate, so that the displaced copper is forced up in miniature ridges alongside of the line. If he holds the needle quite perpendicular there will be a slight ridge on each side of the furrow; if he holds it at an angle, there will be only one ridge on the opposite bank of the furrow, as large as the two in the other case put together. This ridge is called the burr, and it constitutes the distinctive feature of dry-point work. Its size depends upon the amount of pressure exercised and upon the angle at which the needle may have been held.

When the plate is inked for printing, the ink clings to the burr and produces a magnificent rich and deep soft shade, the quality of which no other method of engraving can equal.

The dry-point process is very difficult, for there is

Digitized by Google

no means of steadying the hand while it works upon the plate, and there is continual danger of the needle slipping away, especially when a curved or other complicated line is attempted. Furthermore, dry points require a most extraordinary degree of care in the printing. For in the press, and especially in the hands of the printer while he is inking and wiping the plate, the burr suffers rapidly. It is a very slight elevation of copper at best, and as a rule only a dozen or twenty prints can be taken before it is worn off.[1] Impressions taken after this look as if all the life had been taken out of them: they are skeletons, frameworks without shadow or depth.

Dry-point engraving, just like etching with a mordant, seems to have been practised before the real strength of the art—that is, utilisation of the burr—was appreciated. There is a fair amount of fifteenth-century work, especially in the north, which was probably accomplished with the dry point. However, it is impossible to state this with any degree of certainty, for in this case the burr was carefully removed with the burnisher, and the slight line remaining may have been made with the ordinary burin just as well as with the dry point. From the direction of the lines we are led to believe that the latter must have been employed. If this be true, then the refined Master of the Playing Cards is among the first to have used the dry point extensively. The so-called Master of the Amsterdam Cabinet—one of the most original and extraordinary engravers of all those who worked before the year 1500—seems to have done a number of plates altogether (not merely the shading)

[1] The days of steel-facing have, of course, changed this. However, it must be remembered that a trained eye can distinguish between the good, warm impressions taken from the copper and the hard, cold ones taken from the plate after it has been steeled.

Digitized by Google

with the dry point. His style of line seems too nervous and ungovernable to have been produced by the burin.

In the application and development of the true burr quality, Dürer again seems to be pioneer. Two of his most splendid prints—a Holy Family and a St. Jerome —depend almost entirely upon the burr for their happy effect. Good impressions are extremely rare, and even the poor ones, from the worn plates, are only moderately common. In this case dry point was used as an accessory to the burin. It has very generally been used to supplement etching. This seems a more natural state of things; for the etcher, who already has the needle in hand, would be most likely to add a touch here and there, while proving a plate, upon the bare copper. It was probably by such chance corrections that the true value of the dry point burr was discovered, namely, that by adding a scratch with the point one gains not only the additional line, but a rich burr shadow over and above it. The Dutch etchers of the seventh century, and above all Rembrandt van Rijn, acquired a marvellous command over this technique, and raised it from being a helpmate to etching to the position of a separate art. A soft, warm tone of subdued light is cast over the plate, and this artificial lighting is often employed to concentrate and emphasize the composition of the picture. Such will be found to be the case in Rembrandt's La Petite Tombe, Triumph of Mardochai, John and Peter before the Temple, and many others.

In our times dry point has been used principally for landscapes and portraits. There is no better way of getting a sunset glow, of rendering the soft shadows of wind-stirred foliage in black and white, than by means of this process. Some of the most charming plates by

Digitized by Google

Haden would alone suffice to prove this assertion. Again, the daintiness and delicacy of the point line adapt it admirably to the reproduction of fair women or of children's heads. No one has of late been more successful in this art than Helleu. Besides applying the burr in a most captivating manner, he has brought forward a new element of dry point—the beautiful sweep and flow of line, wherein he has found no rival.

Digitized by Google

CHAPTER VI

MEZZOTINT ENGRAVING

THE three methods of engraving upon copper which have been discussed so far were methods of line. None of them enabled the artist to print a tone or surface from the copper. In nature, however, things present themselves to our eye almost entirely in tone. In a face, in a landscape, one surface or tone sets off another, and there are hardly any lines to be seen except those that circumscribe the object. It is the artist's task to resolve or translate these surfaces into a scheme of lines. This alone is the feat which makes up his art, and it is in this that one draughtsman artist displays his superiority over another.

Should it by any means be possible to reproduce the tones of nature directly—that is, by the employment of tones in place of lines—this would of course make the work much easier, and would do away with a great deal of exacting intellectual labour. It would give the small artist more of an opportunity, and we should naturally expect him to look about for such means. As a matter of fact, amateurs—by no means only such as voluntarily accept the appellation—have been the originators of most of the processes yet to be described, and have loved to experiment with them. We find this to be the case in all branches of human activity; the technical innovations are

Digitized by Google

generally worried out by the *dii minores*. A true professional, in the best sense of the word, does not look for new matter, but for new form ; he loves to subdue some means already in vogue, and to force them to the expression of his subjective style. Like a Shakspere, he will take up old stories, and make something new out of them. To do this in art requires intellectual capabilities of the first order, far greater than those necessary to the invention of new stories. The second-rate man does not possess such powers sufficiently to develop an original conception into a new and true style. But he loves to handle the implements of the craft, in the continual hope of chancing upon a discovery.

Mezzotinting was apparently somewhat of a chance discovery. For, looking at Siegen's first plate, we note that he used his rocker for the purpose of direct shading, somewhat like a roulette. It was probably only upon making some corrections upon parts thus worked that the new principle occurred to him.

The mezzotinter employs an instrument called a rocker or cradle. It consists of a steel blade or chisel slightly rounded at the lower cutting edge, which may be sharpened at different angles. This edge is set with minute teeth, sometimes as many as one hundred and twenty, sometimes only from forty to sixty to the inch. The curved toothed edge is at the most two and a half inches long ; the steel is set in a handle perpendicular to the edge.

Starting at the upper left-hand corner of the plate (hammered, planed, and polished as before) the mezzotinter rocks with this instrument, the teeth making innumerable close zigzags of about half an inch in breadth, till

Digitized by Google

he has reached the bottom of the plate. Then he commences a second strip to the right of the first, and another, and others till he has reached the right margin of the plate. When he has worked up the whole face of the plate in this manner, he turns it about and works it from side to side—that is, in strips perpendicular to those he has just completed. After that he works it in both diagonal directions. When you learn that he has to go over the plate about twenty times in each one of the four directions, you will know that rocking a plate completely is a very long and tiresome process. Artists could, of course, get some apprentice to do the work for them, and nowadays ready rocked plates may be bought in the market. But they are not frequently employed. For while rocking the plate the artist gets into sympathy with it and will know where it is weak and where it is strong, all of which is, of course, useful in the sequel.

The rocking is not only tedious, it requires a good deal of care, for an equal degree of pressure must be applied so that the plate may be rocked as evenly as possible.

Modern contrivance has succeeded in making rockers that will ensure a greater degree of evenness than the old rocker. In the new machine the blade is not set directly under and in a line with the handle, but at right angles to it. This horizontal handle is more than a foot long, and rests with its further end in a groove. A weight is fixed above the blade where the handle joins it, and the artist's hand now only rocks the handle without exercising any pressure on it, gradually drawing it back in its groove at the same time.

If an impression were made from a plate completely rocked, the paper would show an uninterrupted surface of velvety blackness, for the whole surface of the copper is rough and the ink is held everywhere.

Digitized by Google

Upon the plate thus rocked the mezzotinter draws or transfers his design, this time if he likes with a brush. He then takes a scraper, something similar to a lancet in shape, and cuts away the roughened grain wherever there are lights in the design, more or less according to the strength of these lights. Should he wish any part of it to come out white in the printing, he must cut all the burr away and then polish and burnish the place so that when the plate is inked no ink will be held there. It will be noticed that he works from dark to light, reversing our ordinary way of modelling, just in the same manner as does the modern woodcutter.

The principal artistic quality of this process is its realisation of a deep velvety blackness not to be attained by any other method, though the burr of the dry point is somewhat akin to it. The mezzotinter's plate is in reality nothing more or less than a plate which has been transformed into an unbroken expanse of burr, to be scraped away wherever it is not necessary. But the effect in printing is different. The blackness of the real dry point burr which results when the plate is worked from light to dark is more brilliant and has something of the suggestiveness of a cleverly etched line. The mezzotint blackness is more 'reliable,' so to speak; it is less flashy, and does not admit of such strong contrasts. Taken altogether, the plates are much darker than those done by other methods, and thus it happens that mezzotinting is called in French and German the 'black manner of engraving.'

It has several points to recommend it. In the first place, after the plate has once been rocked it is very easy to work upon, no other method of engraving upon copper being easier or quicker. Secondly, the artist while working has always his design in a positive form

Digitized by Google

before him—that is, the parts become lighter and shinier as the design grows lighter. Again, corrections are easy, since if you have scraped any light down too high you can reduce it by simply rocking the plate slightly again. Mezzotinting is peculiarly adapted to two very different ends, to the most subtle gradation from light to shade, as well as to the reproduction of strong contrasts with cast shadows, such as candle scenes, forges, storms with lightning. Of all the 'surface' methods it must be granted to be the first, distancing the other dry methods by virtue of its facility and extreme sensibility in the hands of a fine artist, leaving the wet methods—those that employ a mordant—behind it by virtue of the fact that it leaves least to chance.

Almost all English manuals on etching and mezzotinting, written by artists, seem oddly enough to be still undecided whether to call Ludwig von Siegen or Prince Rupert the true inventor of mezzotinting. There is not the shadow of doubt on the question, and von Siegen's priority was definitely established by Léon de Laborde in his 'History of Mezzotint Engraving.' This book appeared in 1839, and is based upon original documents. English authors make this mistake perhaps because the earliest book to mention the new art at all, Evelyn's 'Sculptura,' which appeared in the year 1662 in London, attributes the invention to the Prince instead of von Siegen, who was an officer in the Hessian service.

There has hardly been any development of mezzotinting since it was once well established. As has already been stated, close scrutiny of von Siegen's Countess Elisabeth (his first plate, bearing the date 1642) seems to show that he first worked from light to dark with the

Digitized by Google

cradle, and that it was probably only when burnishing down a spot which he had rocked too much that the possibility of an entirely new system of work revealed itself to him. His first really rocked plates were rocked very irregularly. The same holds good of the plates of his pupil Prince Rupert. Neither of these amateurs had the patience—not to be expected of military commanders—necessary to rock a plate evenly, and in the higher lights we can see plainly how irregularly the zigzags run. The Prince engaged the services of a kind of apprentice, Wallerant Vaillant, and he in time became the first professional to engage in mezzotinting. The science which he learnt from his master he kept for a long time as a cherished secret. He was the first man to rock a plate perfectly evenly, and of course it is only upon a plate so treated that the true qualities of mezzotinting will appear.

The craft has undergone no variation or improvement, with the exception of the invention of a new handle to the rocker as described above, to our day. Sometimes artists have etched an outline of their design upon the plate before rocking, giving also some of the heavy shading by means of deep bitten lines. However, this combination cannot be deemed a very happy one, although some of the most renowned artists, such as Earlom, for example, at times resorted to this method. If the black heavy etched line show through after the plate has been rocked and scraped, then the harmony of the soft picturesque mezzotinted shade is disturbed. If it is weakly bitten, and, consequently, absorbed by the rocked grain, then it seems superfluous to have done it at all. At all times combinations of different methods are very difficult and not to be recommended. Dry point

Digitized by Google

and etching are quite akin, and unite in perfect harmony upon the same plate; but beyond these all other methods differ so much from one another in character that harmony and style are lost when they are combined.

There has always been more or less of original mezzotinting, especially in portraiture. Von Siegen's first production was a portrait from life, and among the earlier adepts of the art quite a number produced hardly anything else but portraits from life. Still, if we take into account all the plates ever scraped, I should think that at least nine-tenths of them would be found to be reproductions of oil-paintings. Mezzotinting, being a surface method and a comparatively easy one, was hailed with delight by all the artists who limited themselves to the task of copying paintings. Their chief aim must always be a perfect chiaroscuro, and working in line is not only a difficult method, but one which will always fall somewhat short of success from their point of view. Now, however, they could copy in the same medium, as it were, in which the paintings were done. As is well known, the best period of this reproductive art occurred in the latter half of the eighteenth century, when English engravers devoted themselves to mezzotinting the pictures of the British school, which, in consequence of being able to call artists like Gainsborough, Romney, Reynolds, its own, could lay claim to the first rank among contemporaries.

The Dickinsons, Earloms, Fishers, Houstons, McArdells, Pethers, Smiths, &c., have gained great and deserved renown, and raised the art of mezzotinting to such prominence that it has been almost identified with the English school, although it was not invented in this country, and not practised here exclusively. But

Digitized by Google

upon the Continent the art fell into oblivion and disrepute: tradition was interrupted, so that the later continental mezzotinters at Mannheim, Vienna, and Berlin went to London in order to learn the craft, and their productions plainly show this dependency.

There was also an era of mezzotinting in Germany, about fifty years before the English one, at the time when the well-known animal painter Riedinger lived. But although the art was very much in vogue, it is size and quantity that we get rather than quality. Some engravers, Kilian, for example, resorted to most objectionable devices, such as printing their plates with green, pale blue, or pink ink. More than all others, mezzotinting is the one graphic art which calls for a heavy dark ink, and its deep shades printed pink look simply ridiculous.

Nor can much that is good be said about the period, during the second quarter of our century, when mezzotinters worked upon steel, and brought about an unpleasant combination of line engraving, mezzotinting, and what not, which goes under the designation of 'mixed style.'

The revival of the graphic arts which has come to pass in our day has extended to mezzotinting along with the rest. Much able work has been done of late, most of it consisting, as before, in reproductions of oil-paintings. Some good original landscapes have appeared. These are necessarily wide vistas, since a close scene in which there is much small detail of foliage, grass, and so forth is not a very suitable subject for mezzotinting.

Digitized by Google

CHAPTER VII

AQUATINTING

OF all methods of engraving upon copper, aquatinting displays most variety. Instead of naming the inventor of the art, we must name the inventors of the different kinds of aquatinting. Even here we cannot give quite accurate lists, as sometimes the invention of a particular kind of work is claimed by several people.

The name itself discloses that it is a means of doing surface work upon copper by the aid of *aqua fortis* or acid. The simplest method would be to apply the acid directly upon the copper with a brush. It will eat the polish away and roughen the surface of the plate, so as to make it retain some of the ink when wiped. Of course, the flow of the acid in this case is beyond control; it will affect the copper at once unequally and only very little, so that none but a very weak tone can be obtained in this manner. Like the tone that results from rubbing the plate down with sulphur, it is of very little use when employed alone.

A grain which is a little like that of aquatint can also be obtained by warming the plate, upon which 'ground' has already been laid, and redabbing it unevenly. Of course none but an accidental and very unequal grain can be obtained in this manner.

Digitized by Google

The principle of 'tone' aquatinting consists in attacking the copper in such a manner that some of it remains protected from the acid, the affected particles lying, however, so closely together that to the naked eye they unite to form an uninterrupted surface.

The classic method of aquatinting is associated with the name of Jean Baptiste Leprince, who perfected it, if he did not himself invent it. He was something of a scapegrace, married at eighteen a woman of forty, and after he had made away with her money, betook himself to Russia, where he worked at his new art.

Leprince ground some asphalt or resin exceedingly fine and put it into a box. Within this box there was a flywheel with some cord wound about the axle. The cord could be drawn from the outside after the box was closed and thus the wheel set into rapid motion. This would raise the dust into a cloud. When the cloud had begun to settle he carefully slid into the box his bare copper plate, upon which the rest of the dust-cloud would fall. Then he removed it carefully, and heated it gently so that the minute particles adhered to the copper, but not enough to melt them, and let them run together. All superfluous dust was finally blown off the plate.

The ground, properly laid, consists of numberless infinitesimally small particles, touching one another. As they are round, there is, of course, always some space between each adjacent four. Through these spaces the acid can attack the plate, while each resin or asphalt particle protects the copper just below it.

A man called Stapart invented another method which seems simpler. He spread a thin coating of transparent etching 'ground' upon the plate, and kept it fluid by means of heat. Upon this he sifted very finely

Digitized by Google

ground sea salt, which by its own weight sinks through the ground to the surface of the copper. Then the ground is let dry, and thereupon the salt is dissolved in water; thus a porous 'ground' results, as before.

In modern times aquatinters generally make use of a fluid 'ground.' This consists of resin dissolved in rectified alcohol, and is prepared in different strengths. When drying upon the plate it breaks up into a granulation, which is coarsest in the solution that contains most resin. Through this granulation the acid bites the copper.

The most recent method is the sand-paper aquatint.[1] The plate being covered with common etching 'ground,' fine sand or emery paper is placed upon it face downwards, and the whole pulled through the press several times. By this means the 'ground' is again perforated like a sieve.

When the perforated 'ground' has been obtained the rest of the process is the same in all cases. The design is transferred to the plate, except in those cases where a line etching has already been bitten in the copper, which would show through the transparent 'ground' well enough. If any portion is to receive no tone at all, it must be stopped out with Brunswick black before all biting. The bitings and further stoppings out are conducted on precisely the same principles as in linear etching, such portions as are to appear darkest being left open to the action of the mordant longest. The 'ground,' however, is very sensitive, and will not withstand the acid as long as ordinary ground. Consequently, only a comparatively shallow tone can be obtained, especially

[1] This is also called sand-paper mezzotint.

Digitized by Google

when the earlier methods of laying the ground have been employed.

The great drawback of this surface method as compared with rocked mezzotinting is that all portions of different bitings are clearly defined. There are no gradations, for the brush, while stopping out, circumscribes a distinct space, and this will stand out sharply from the adjacent spaces that may have been bitten once oftener or once less. However, this failing may be remedied to a certain extent by retouching. With the burnisher, with charcoal and oil, contours may be polished down somewhat, so that portions of different bitings will be made to run into each other.

But this is not over-easy, and, generally speaking, the process is not well adapted to the rendering of oil-paintings with their subtle gradations. On the other hand, it is admirably adapted for the purpose of reproducing sepia- or wash-sketches, and to this use it has been principally put. The tone it produces is very even: it might be called translucid in comparison with the opaque tone of the mezzotint.

When employed as an auxiliary to etching, it is used to tone the sky, the waters, or the distant background, in a word, to approach the linear design to the chiaroscuro of oil-paintings. The effect is reached all the more readily by means of printing in brown ink; some of the monotone landscapes of a Goyen, for instance, could be facsimiled quite easily. Kobell was perhaps the best master in aquatint reproductions of landscapes.

Until quite recent times there has been but one artist who elevated aquatinting to the position of an independent art, worthy of conveying original ideas. Goya, the famous satirist, the fantastic draughtsman, is the hero of

Digitized by Google

this process, and though he seldom used aquatint quite alone, still the line etching is with him a secondary matter. He infused the reckless dash of his character into the process of aquatinting, and with him alone it rises from a subsidiary place to one of importance.

Mention should also be made of the fact that many artists tried to produce the aquatint tone without the use of a mordant. Rubbing the plate down with sulphur will produce such a tone, but a very weak one, as has already been mentioned. Eighty-one years ago an amateur in Stuttgart, called Keller, described a new way of imitating the aquatint method without the use of acid. He crushed sand on to the bare copper with the aid of steel rollers of different sizes; when detail was needed he fixed the sand by means of paint, and used small rollers and steel keys. His imitation is not bad, but the tone is a little more opaque than the true aquatint tone. In later days the same principle of crushing sand into the bare copper was simplified, sand-paper being run through the press on the face of the copper. Only one even tone can be thus attained, and gradations must be made by polishing with the burnisher, on the same principle as mezzotint gradations. Some artists obtain a tone or grain on the plate by laying a file on the copper and hammering upon it. The plate can also be roughened by ordinary filing or rubbing with emery paper. All these grains are more or less of a compromise; they have not the depth of a mezzotint tone, and, on the other hand, do not equal the delicate 'liquidity' of true aquatint.

Digitized by Google

CHAPTER VIII

THE CRAYON METHOD AND ITS DEVELOPMENTS

THE art of engraving upon copper is so manifold that we find even one method which assumes a sort of midway position between line and tone. As its name indicates, the crayon method imitates a crayon, more particularly a sanguine, drawing. When a blunt broad crayon is used on rough paper, we do not obtain a clear line, nor does it seem quite right to speak of the result as a surface, though for that matter we can easily approach one by drawing many strokes closely together.

The crayon method is a subdivision of etching, and it has called out a set of new instruments—the roulette, the échoppe, the mattoir, &c. The roulette is a little toothed wheel set in a handle so that it can be run along a line. It resembles the instrument which people employ to cut out patterns. There are several different forms of roulettes, however. Sometimes the wheel is a quarter of an inch broad and there are several rows of teeth ; sometimes the teeth run across the whole breadth of the wheel, so that it is serrated and resembles a tiny cog-wheel. The échoppe is like a burin, only round in section, not four-cornered. The mattoir is something like a miniature copy of some of the cudgels that our old gothic ancestors used with which to belabour one another. It

Digitized by Google

consists of a short bar of steel running into a small bulb at the lower end, and this ball is set with teeth. Another instrument used in crayon engraving is a burin which can engrave several dots at a time.

If you inspect a chalk line closely you will discover that it consists of numberless dots, irregular in size and disposition. To make a print imitative of it, the engraver covers a plate with the common etching 'ground' and transfers his crayon drawing upon it. Now he passes different roulettes up and down the lines, going over them with the mattoir and point graver. The instruments remove the ground just in the same manner as an etching needle would. Then the plate is bitten, and when printed in red resembles accurately a sanguine drawing.

Jean C. François is the inventor of the method, but others have laid claim to this distinction. François seems to have been an interesting sort of man, continually experimenting with different methods of engraving. It is by no means certain that he was not the earliest man to discover aquatinting, though he does not get the credit of it. He was the author of a very curious and rare portrait of the philosopher F. Quesnay. This is a sort of encyclopædia of engraving, as the face was done in mezzotint, the dress engraved with the burin, background and border in crayon manner, accessories in aquatint, and the base of the bust in pastel manner.

In a letter still extant François says that his first prints in crayon manner were done as early as the year 1740. Seventeen years later the French Royal Academy granted him recognition, while the king gave him a pension. But he did not enjoy this good luck very long, for other people usurped the credit of his invention—a fact which he took so much to heart that he died.

Digitized by Google

The crayon method belongs also to that class of work which entices artists to experiment with new tools and worry out little improvements. Meynier, for instance, an artist who published a manual on engraving at Hof in 1804, relates that he discovered a splendid way of simplifying work by using a bunch of slender knitting needles, tied together so that each needle could move by itself. When let fall upon the ground, they would perforate it, and as they did not all come down at once and with the same force, the necessary inequalities were attained. He afterwards sharpened the needles and used the bunch also upon the bare copper, tapping it with a hammer.

The crayon method proper did not admit of any development; there could only be different stages of perfection.

François does not succeed any too well in his attempt at facsimile, and sometimes has to employ engraved lines in order to bring out his design. His rival Gilles Demarteau is the crayon engraver *par excellence*, and some of his many hundred prints imitate crayon drawings so well that we might easily mistake one, should we happen to find it with the plate mark cut off. The red crayon, or sanguine, imitations are by far the most telling, as has already been noticed.

In a wider sense, however, we may speak of two developments of the crayon method, and speak of pastel engraving and stippling under this head. Furthermore, the roulette, the instrument which plays such an important part in crayon engraving, has been put to new uses.

There lived a goldsmith by the name of Franz Aspruck, born in Brussels, who used the roulette as early as 1601 in the fourteen hammered engravings that he published at Augsburg. Upon one of them he calls him-

Digitized by Google

self the 'inventor of a new method,' which may well be supposed to refer to the use of the roulette. We shall have to mention him again.

Some of Everdingen's illustrations to the story of 'Reynard the Fox,' which were at one time supposed to have been mezzotinted, were perhaps treated with the roulette.

The man who employed the roulette probably more than anyone else was an etcher by the name of Boissieu, whose principal plates were done, roughly speaking, about a hundred years ago. He managed to secure quite a new effect by means of this instrument. After etching a plate, he used it somewhat as Rembrandt did the dry point, to give to his design the effect of a deep chiaroscuro. Perhaps some of this rouletting was done upon etching ground and then bitten; most of it, however, seems to have been done upon the bare copper, as the shallowness of the tone would tend to prove. For such work strong pressure is required, and the teeth of the wheel must be short and very hard, lest they should break off. Boissieu's most successful plates were some in which he made use of very strongly cast shadows, such as 'The Anchorites' and 'The Wine Cellar.' His process achieved the desired effect to perfection.

Sometimes a plate has been engraved altogether by means of the roulette. I know at least of one example—H. Guérard's superb little print of fisher-boats becalmed in a mist, published in the *Estampe Originale*. However, it forms an exception, I believe; and, upon the whole, we scarcely ever find the roulette used by itself. One of its principal uses, mention of which should not be omitted, is the retouching of aquatinted plates. Almost all the impressions of Goya's prints which are still to be found

Digitized by Google

in the market are new ones taken from the plate after the worn aquatint has been carefully freshened up by means of rouletting. Again, reproductive etchers find the roulette of great use occasionally, when they attempt to copy the fine gradations from light to shade in some oil-paintings.

There is really no need to distinguish the Pastel method of engraving from the crayon method, for the relation between the two is just as close as that between a crayon and a pastel drawing. It is simply working with many coloured crayons instead of monochrome, and its character is more one of surface work than of line. Therefore they differ in appearance rather than in principle. Each pastel engraving requires, of course, as many printings as there are different colours in the design.

In 1769 there appeared a book by Bonnet—one of the rarest books in the whole field of art literature—describing *his* invention of engraving pastels. He, in his turn (after François and Demarteau) lays claim to the credit of having been the first artist who engraved in the crayon manner. Bonnet was a clever business man and a prominent publisher. Sometimes he signed his works 'Bonnet,' sometimes 'Marin,' and under the latter name professes to have invented the art of printing in gold.

Crayon and pastel prints appeared only during a comparatively short period. Naturally people would in time grow tired of methods that allowed of so little variation, and where such strict limitations were imposed upon the engraver. The only form of this kind of engraving which grew to be important is stippling. This art, although it is really only a later evolution of the crayon method, has always been considered a distinct method of engraving, and we will treat it as such by giving it a separate chapter.

Digitized by Google

CHAPTER IX

STIPPLING

MODELLING by the application of dots and points has been a constant practice in engraving almost ever since the art began. The statement will frequently be found that the dotted prints of Campagnola, of Delaune, and other old masters, were anticipations of Bylaert and Bartolozzi. But this is inaccurate and misleading, for those early engravers produced their dots with the burin, and did not stipple them. Examined with the aid of a magnifying glass these dots are seen to be nothing but extremely short lines, a series of such dots being in essence an interrupted line. Engraved dots of this nature have been freely used in their work by almost all the burin engravers, from Dürer to Nanteuil; still no one would think of deducing the art of stippling from them. The fact that Campagnola uses rather more than the usual quantity of such dots does not bring him any nearer to the artists in stipple engraving.

Stippling is an etching process, the greater part of the work being done upon the plate, when it is covered with an etching 'ground.' By the aid of single and double needles, ground to different shapes and sizes, the etching 'ground' is perforated with irregular dots, they being, of course, larger and close together in the dark portions

Digitized by Google

of the design. These dots are then bitten into the copper by a mordant. The delicate modelling of face and hands is generally put in afterwards, dry, upon the bare copper, with much the same tools, and it is especially in these places that the dots are so small and so close together as to form apparently an uninterrupted surface with tone gradations.

Next to mezzotinting, stippling is of all the methods of engraving upon copper the best adapted to the purpose of reproducing paintings, and to this use it was almost entirely put. There are very few stippled plates done directly after nature, not even many portraits. The process is, after all, too slow a one for that.

The gradations from light to shade are, if possible, even more subtle than in the art of mezzotinting, and the principal characteristic of stippling is its exceeding delicacy. In fact, its softness borders dangerously upon weakness, and it is an art with which we can very readily get out of patience if we see too much of it. For it is something to be thankful for that we can stand manifestations of power in the long run better, and find them less wearisome, than manifestations of daintiness. Confectionery surfeits us sooner than bread and butter.

Just at present good stippled prints stand in high esteem, and for the best specimens huge prices are paid, which would have been scoffed at thirty years ago when line engravings were still considered to be the only form of engraving that deserved the name of true art. The century which has been reviewing all periods of painting seems about to do the same thing in regard to the art of engraving. The great popularity of line engraving gradually waned, and was relieved by a period during which etchings were deemed the only artistic thing in

Digitized by Google

black and white. Then followed a sudden craze for the rocked mezzotints of English masters of the last century. As an example, I may state that a copy of one of Watson's mezzotints after Reynolds, which was published a hundred years ago at, say, thirty shillings, was sold at an auction in 1894 for the sum of £357. At present fashion seems to have settled upon the stippled prints, and they show a similar increase in value. But while in painting this recapitulation of old styles was so general that even artists undertook to revive them, it was in engraving limited to the collectors, and no modern artist has attempted to resuscitate obsolete processes such as stippling.

It was a very fortunate circumstance for stippling that there arose simultaneously with it a style of painting to the interpretation of which it was admirably adapted. This pseudo-classic style, best exemplified by the works of the once famous Angelica Kauffmann, displays a peculiar degree of delicacy that is continually on the verge of becoming effeminate. The most of her pictures, and still more of the pictures by her imitators, are distinguished by the same smooth prettiness, the glossy, soft brilliancy, which make up the decisive features of porcelain painting. They were indeed copied upon porcelain time and again. Remembering of what kind we found the main characteristics of stippling to be, we shall comprehend that all these qualities can be reproduced excellently by this method of engraving. Artists often managed to obtain the soft miniature-like impression by means of printing in colours and upon satin.

We meet with the statement that a Dutchman, Jacob Bylaert, was the first to use stippling as a distinct method, about 1760, and to describe it in a pamphlet published

Digitized by Google

at Amsterdam. It seems doubtful, however, whether this credit can be accorded to any one man, for stippling must have grown gradually out of the practice of crayon engraving in more than one place at a time. The art has been connected principally with England, and especially with Bartolozzi, who emigrated from Italy and settled in London in 1764. He and a host of followers quite monopolised the art. It was from them, and not from Bylaert, that the engravers who practised it upon the Continent—such as Pfeiffer, John, Vangelisty—learned the technique.

Bartolozzi, the unfortunate Ryland, Burke the daintiest of the dainty, and the delightful Caroline Watson, were, perhaps, most proficient in the art. Yet these are names rather than individuals. For it must not be forgotten that stippling as an art hardly allows anyone to infuse his personality into the work before him. Whenever we find a stippled print unsigned, it is extremely difficult to assign it to any one particular artist. All the work looks alike, and herein lies the weakness of the art.

Digitized by Google

CHAPTER X

SOME STRAY METHODS OF ENGRAVING

WE have now discussed the principal methods of engraving upon copper. A very great quantity of plates has been produced in each one of them. It is, of course, impossible to give an estimate of the number of different engravings extant. We can only say that there are probably more etchings than anything else. Line engravings would follow close at hand: then come mezzotints and stippled plates, aquatint and crayon-pastel bringing up the rear.

Besides these methods there are a few stray ones which still have to be considered. None of them are important if we consider them from the point of view of the amount of work produced by their means. They are partly the craft of artists whose principal activity lay in another direction, partly the practice of a few men who have made a specialty of them, partly again the pet hobby of an etcher's or amateur's idle moments.

In the first class I would place the hammered prints of the goldsmiths. In France and Germany there is a distinct name for them (*gravures au maillet*, Punzenstiche); in England we have to use the term 'dotted prints,' which, unfortunately, must suffice for several different kinds of engraving.

The goldsmiths have hammers which run to a point,

Digitized by Google

with which they can hammer little dots into the metal, arranging the dots so as to form a design or pattern. The task becomes easier if a puncheon be used, it being placed in its proper position and tapped slightly with an ordinary hammer.

The custom of ornamenting silver plates, jewelled frames, and the like in this manner is very old. Naturally the designs are not very complicated. The dots are arranged close, so as to appear like a line when held at arm's-length ; when bunched they form a toned surface, which can be gradated by making the dots deep or shallow. Finally, impressions upon paper may be taken from such a plate, as well as from any other intagliated plate.

This process is, of course, excessively laborious, and its capabilities are limited. It would be difficult to find an original artist of rapid fancy willing to adopt it. The art has undergone three stages. The first, comprising the earliest of such hammered prints, makes us acquainted with the work of some sixteenth-century goldsmiths, among whom Paul Flindt and Hieronimus Bang may be mentioned as being perhaps the foremost. Like the later nielli, their prints were intended not so much for the enjoyment of the collector of engravings as for the practical use of brother goldsmiths, who could ornament silver ware after such patterns. The human figure is seldom attempted, there is no depth in the prints, and the designs are as simple as can be.

A second stage of puncheon engraving is made up by the so-called negative prints. These are properly not prints at all, and are rather to be looked upon as curiosities. Like a photographic negative, they show light and shade reversed. The originals were silver or

Digitized by Google

gold plates (more rarely copper) let into the sides of caskets or framed and hung in antiquaries' cabinets. Where the design is to show high lights the little indented holes are most frequent. Now, if you hold such a plate at a certain angle to the window, the little holes will reflect the light, while the surface of the metal left untouched appears dark, and thus by a slight turning of the plate it is as if by magic turned positive. While working upon the plate the engraver, of course, always kept it at this certain angle, and worked just like the mezzotinter from dark into light. The Kellerthalers at Dresden and Mathias Strobel, of Nuremberg, have done the best known plates of this sort. They elaborated pictures that were fully and excellently modelled, and it is to be regretted that their work, on account of its being done 'negatively,' could have no further value beyond the single original plate, since when such a plate is printed the impression naturally always remains negative. For the ink is held by the little holes, and incline your print at what angle you will, it will not turn positive ; the black always remains black and the untouched paper always white.

The third stage of puncheon engraving offers us plates that have been treated essentially in the same manner as those just mentioned, only they are positive. Franz Aspruck, who has been mentioned already, executed a set of Christ and the Apostles, and an Eros and Anteros in this manner, dated 1601. It was stated above that he probably used the roulette in addition to the puncheon. Compared with the hammered plates of the early goldsmiths, his work presents quite a different appearance. It is as carefully and elaborately modelled as anything by the Kellerthalers. His referring to

Digitized by Google

himself as inventor of a new method may bear upon his use of the roulette; it may also signify that he managed to handle the puncheon so as to produce a perfect picture impression. He worked very well, as is proved by the fact that for a time people were misled into thinking that he had mezzotinted his plates, because of the excellent gradation from light to dark.

The man with whose name the highest development of hammered work is connected is a Dutchman, Janus Lutma, who lived down to the year 1689. He aimed at about the same effect that engravers later on obtained by means of the easier and much quicker stippling process. Of course the old laborious and unsatisfactory method of puncheon engraving fell into disuse immediately the new one came to be generally known.

In the second class of stray methods—namely, such as have interested only a few artists who made a specialty of them—I place soft ground etching.

The common etching 'ground' is mixed with equal parts of tallow by means of melting: this keeps it soft after it has been laid upon the copper plate. When ready to begin his work the etcher places a piece of grained paper upon this ground and draws his design with a blunt point upon the back of this paper. Great care must be taken to touch the paper only with the point or pencil. Upon removing the paper cautiously, the 'ground' will be found to have clung to it wherever the point has been passed, and at those portions the copper has been laid bare. The plate may now be etched. The lines thus etched have quite a distinct character of their own. They are considerably less defined even than ordinary etched lines, not to mention the burin line. Of course, by proper use of the point surfaces may be pro-

Digitized by Google

duced, and these, too, have much more of a casual, sketchy grain than can be obtained by means of aqua-tinting.

This method was discovered by a Swiss etcher, Dietrich Meyer, over two hundred and fifty years ago. Since then it has been very sparingly employed, for to attempt it means to court the very mischances one would like so much to do away with when working with acid and 'ground.' Still, this method, too, has found its master, and a mighty one he is. I mean Félicien Rops, the Belgic-Parisian. His utter disregard of the world's praise, and especially of its blame, was certainly the outcome of a true artistic spirit, one that knows no other law but that of its own individuality. His marvellous powers of drawing, his astounding control of all the processes which he employs, especially of the vernis mou, make us regret doubly that half of his work is proscribed, and exists only for a class of collectors who enjoy other than artistic qualities in it.

In an interesting letter to the printer Delatre, Rops explains the details of his soft ground etching process. He draws his design on tracing paper and pastes it, along the upper edge only, on to the plate. He then lays paper of different grains between the drawing and the 'grounded' plate, using one grain for one portion of the plate, another for another, as the case may require. By means of the tracing paper design he can always control the work, and avoid working upon the same place twice.

About one hundred years ago, J. H. Tischbein the younger invented a method which in its results greatly resembles 'soft ground' etching. He powdered crystalline tartaric acid upon a plate before the etching 'ground' had become quite dry, so that it would cling to the

Digitized by Google

'ground.' Then he drew his design with a blunt point upon the plate, forcing the dust particles through the ground. When the plate is inserted into an acid bath the dust is dissolved, and leaves the copper bare for the mordant to act upon. Very few people besides the inventor have attempted this process, and some of them complained of its being unsatisfactory. The number of engravings of this kind is very limited.

In the third class of stray methods, I should place monotypes. They are not engravings at all, properly speaking. With printer's ink a man paints some design in monochrome upon a plate. If this be passed through the press under a sheet of paper, the design will be found to have been transferred to the paper, if it was not so heavy that it was spoiled by the pressure of the press. Of course only one impression can be taken, and there has been no engraving of any kind done. One does not see the slightest reason for the existence of such a 'monotype,' for at the very best the picture upon the paper is exactly what it was on the plate, and it is absolutely impossible to divine why the artist should have taken the trouble to go through this roundabout way, when he might just as well have painted directly on the paper at first. The going to press was of no use, as long as he could take but one impression.

Means have been discovered, however, to treat 'monotypes' in a manner so as to allow of an edition being printed from them. The monochrome painting, while still wet, is dusted with a certain powder, the greater crystals of which have a tendency to settle where the ink lies heavy, the lighter where it is spread out thinly. When the monotype is dry, it is, in fact, a miniature bas-relief.

Digitized by Google

From this electrotypes and casts may be taken, and these printed like copper plates.

The process is at present associated in England with the name of Mr. Herkomer, who hit upon the certain kind of metallic powder referred to; but it was practised before his time, for instance, in the K.K. Chalcographisches Institut at Vienna, other powders, such as blacklead, being used.

The simple fact that by electro-chemical means monotypes have been rendered printable does not by any means raise them to the dignity of an engraving. They have no more right to be considered a specimen of the fine arts than a phototype or photogravure has. For in both only the original painting—whether monochrome or polychrome—is a product of art: the rest is all mechanical process, which does not require an artist's hand or brain.

Digitized by Google

CHAPTER XI

COLOUR PRINTING

THE art of printing in colours has engaged the attention of graphic artists from the very first. It was natural that the early woodcutters, whose productions were in so many cases coloured by hand before they left the establishment where they were made, should soon set about discovering a new way of illuminating prints which should be quicker than the old method of doing it by hand. They probably tried stencilling first, but attempts at true colour printing from wood blocks appear almost, if not quite, as early, and there are extant some fifteenth-century impressions of woodcuts printed in two or more colours. The relief block adapts itself very well to this purpose, since it can deal with surfaces as well as with lines, as we have seen.

With regard to intaglio engraving, matters were somewhat different. For it took the intaglio engraver about two hundred years before he found out the means of working in surfaces or tones. Before that had been discovered, colour printing from copper plates could not be thought of. For the aim of colour printing, generally speaking, is to approach more closely to nature, is realism in a word, and it stands in direct opposition to the ideal line-transcription after nature which the

Digitized by Google

engraver or line-etcher produces. The two will no more mix than oil and water. Should anyone wish to be convinced of this by practical demonstration he need only turn to the prints published by P. Schenk about the year 1700. Schenk took some line engravings, mostly floral pieces, and printed them in natural colours. The white paper, of course, shines out between the lines. In a plain black print this is a necessary factor, upon which the artist counts when he wishes to produce different strengths of shade. But no one wants all natural colours broken up indiscriminately by white spaces, which occurs when such a plate is printed in colours.

The earliest man to attempt colour printing in engraving was Hercules Seghers, an etcher who lived during the first half of the seventeenth century. His method was very odd and the desire of 'printing pictures' evidently led him astray. He generally used canvas instead of paper, traced the outlines of his design upon it, and then laid on the colours with a brush and oils, without modelling any part of the work. When this was done he printed an etched plate upon the top of it, which was inked, however, with one ink only, and which furnished drawing and modelling. Additions and corrections of colour were put on afterwards in most cases, also by hand. Such a method of work is, of course, not really colour printing at all. Impressions of Seghers' prints are very scarce and most of them are very beautiful, since he possessed a fine taste for colour harmonies and was a good line etcher as well. Yet these facts must not deceive us into styling him the pioneer of true colour printing, as has often been done. We can only say that he was the first man who felt a desire to do such work, but he did not find a way.

Digitized by Google

Where he uses fine dry-point lines the shade is naturally lighter than where heavy etched lines occur, but he never inks a plate with different colours at once, nor does he ever print with more than one plate.

There are two methods of printing copper plates in colours. The one is to ink one plate with all the colours at once, applying blue ink for the sky, green for foliage, and so on. This is virtually nothing more than painting upon the plate, and painting under difficulties too. For the ink cannot be applied with a brush, since it must be forced into the lines, and the superfluous quantity removed from the surface. It is very difficult to accomplish delicate work in this manner, because the printer, while wiping a small piece of the plate, may accidentally encroach upon some of the adjacent lines of a different colour, and while inking it is hard to keep each colour in its proper lines. The colours must be rather moist, so that they will not harden before all the inking is finished, and this in the case of an elaborate plate will take up a good deal of time.

This method of colour printing scarcely ever produces perfect results in the press. Almost all proofs must be retouched by hand more or less, with a brush and paints, after they have left the printer. In very many cases indeed it will be found that the greater part of the colour on the prints is hand-painted on the paper, while only a comparatively small portion has been really printed. With the aid of a magnifying glass this can easily be detected. If the colours have been printed, the paper between the dots and lines will appear white; if they were hand-painted, they will cover lines, dots, and white paper as well, and upon close inspection the traces of the brush will appear.

Digitized by Google

No two impressions of a coloured one-print-plate will be exactly alike, since no printer would be able to repeat the complicated process of such an inking, without producing at least slight variations. Beyond the inking, colour printing of this kind involves no new process, for the plates are engraved, stippled, mezzotinted, &c., in the same way as if they were to be printed in plain black. There are black impressions extant of almost all the plates of which we possess coloured ones.

One-plate colour printing has been applied principally to the art of stippling, often with delightful results, as is shown in some examples of Bartolozzi, Ryland, C. Watson, and others.

The second method of printing in colours is to make a plate for each colour and print them consecutively on the sheet of paper. There will be one plate upon which only the sky and such other portions as may be blue are engraved, a second one upon which verdure and green portions are engraved, and so on. The different plates must, of course, be of exactly the same size, and by the aid of a tracing which contains the complete design it is contrived that each portion engraved on whatever plate shall be exactly in its right position. Each plate is perforated two or more times at precisely the same spots. These holes are used as registers, to ensure that the paper lies exactly at its proper place during each printing.

The number of plates varies, and depends primarily upon whether the original design be highly coloured or not. By clever workmanship four to five plates can be made to achieve quite a gay effect of colour. In their best work Janinet and Debucourt used seven, eight, and even more plates. It is very difficult to register the printings, however, since, as the reader will remember,

Digitized by Google

the paper must be damped before each printing, and it expands and contracts unequally. The damping may also cause the colours already printed to run. Thus there is constant danger of the work being spoilt in the course of many printings.

On the other hand, this method has many advantages over the other. In the first place, it is true colour printing, since it ensures that all impressions will be exactly alike. For each one of the single colour plates is mechanically inked like any black-and-white plate; no artist is required to paint up the plate. Then the method, in spite of the several plates and printings, is, upon the whole, a quicker one, since the process of inking is so much easier and shorter than that of painting by hand.

Colour printing from several plates was applied especially to aquatinting in its various forms, and its two best proficients, Janinet and Debucourt, have already been named. Unfortunately it was a popular art; the general public inclines towards naturalism, and will always prefer coloured plates to black-and-white art. Appealing in its principle to the uncultured public, it had also to be guided by their taste as regards subject. Thus it happened that printing in colours was used chiefly for caricatures, political satires, and a large number of single sheets which were not held in high esteem as works of art in their day, but rather served only to amuse people by the story they told. They were not carefully cherished and kept by the amateur, consequently most of them have long since perished.

Neither of these methods of colour printing can be said to involve any kind of new process, for neither the inking with many colours at once, nor the working

Digitized by Google

several partial plates instead of one complete plate, introduce any new technical feature. The plates themselves are produced and run through the press in the usual way.

There is another method of colour printing which, although it likewise involves no new process, is based upon a completely new artistic principle. This, at once the oldest and truest system of colour printing from an intaglio plate, is the three-colour method invented by J. C. Leblon, about 1720.

Leblon was a native of Frankfort-on-the-Main, who had taken up mezzotinting, and who travelled about a good deal, staying at different times at Amsterdam, London, and Paris. Newton's theory of light, the theory which reduced all colours to the sum of three, counting black as the absence of all the colours and white as the combination of all, seems to have made a great impression upon him. Dealing with pigment colours, these three are yellow, blue, and red. Leblon tried to apply the theory to colour printing, and made the first attempts with his invention in Holland. He perfected the process in England, and tried to interest the King in it. Although he received some support, it was not enough to ensure success, and when he afterwards tried to carry out his schemes by the help of a mercantile company he became bankrupt. Finally, he went to Paris, where he again obtained royal privileges, but neither did these lead him to success.

Leblon resolved each portion of the painting which he proposed to reproduce into its component parts of yellow, blue, and red, and mezzotinted three copper plates, one for each of these colours. Now, in some cases his task was not difficult. If, for example, he had

Digitized by Google

to reproduce a green dress, the blue plate and the yellow one could be worked for the purpose, while the red one would be left blank. When super-printed the yellow and the blue would give the required green, which could be made darker or lighter by using the blue or the yellow plate respectively so as to carry more ink. Such a simple case, however, is an exception, and as soon as matters become more complicated—when complex shades, gradated modelling, delicate tints have to be reproduced, cases sure to occur in almost every painting—the task becomes enormously difficult. Let anyone try to resolve each little portion of a painting into its component colours, and he will see at once how hard it must be to work three plates so that each one of them furnishes just enough of its own colour to produce in combination with the other two the necessary tint and the drawing at once. Only one yellow, one red, and one blue plate were available; to make gradations of these, Leblon had to mezzotint the plate heavily, so as to bring out the colour solid, or scrape down so as to let the white paper shine through the ink and lighten the tint. White and light were produced by the paper, black by the super-printing of all three plates.

Leblon's plates are very interesting, but they fall short of being satisfactory *facsimiles* of the paintings they copy. Besides the smaller ones, illustrating the book in which he explains his invention, he executed over twenty-five colour engravings, many of them very large, and all commanding high prices on account of their great scarcity. In most cases he found it difficult to get the requisite colours, and scarcely ever did he succeed in reproducing the exact shade—that is, there will be a brown, or a purple, or a flesh tint at the right place perhaps, but it will not be the exact brown or purple or flesh tint wanted.

Digitized by Google

All of his plates are very poor in modelling. There is something about them which makes them appear not altogether unlike a photograph slightly out of focus. None of them show energetic shadows and strong contrasts.[1] This is the result of his employing no real black, and of having, consequently, no factor upon which he could rely for the strong shadows that govern correct drawing. A follower of his, Gautier d'Agoty, appreciated this failure in Leblon's system, and easily found a remedy by adding a fourth black plate. This plate virtually carried the design, and the other three had merely to colour it, which they could accomplish better if they had not to furnish the drawing at the same time.

Upon the whole, there were few artists who took up the three-colour method: Gautier d'Agoty, his sons, and Lafreri in Italy were about all. In our days the three-colour theory has again stepped to the fore, as will be shown below.

There is yet another man who practised intaglio printing in colours, and who must not be passed by unnoticed. He was a Dutch amateur called Ploos van Amstel, who lived at Amsterdam during the greater part of the last century. Originally he was a merchant, but, feeling a strong inclination towards art, and finding sufficient time to acquire proficiency in the matter of drawing, he devoted himself in later years to producing printed facsimiles of water colours, drawings and paintings.

His prints are most puzzling, and I do not believe that there is anybody now living who can tell exactly how they were done from merely examining copies of them.

[1] Leblon's portrait of King George I. seems an exception to those criticisms. However, it was indubitably not printed altogether on the three-colour theory, and the modelling was improved by the introduction of heavy etched shades.

Digitized by Google

There are portions where traces of the cradle are plainly recognisable, others where you can detect the tracks of the roulette, and others that look as if they had been aquatinted. On the other hand, there are also spots which do not seem to have been done by any of these methods, and it is almost impossible to worry out with any certainty the complete process of the more complicated plates. At the time of their first appearance they caused much wonder, and it was doubted whether they were really printed. To silence these objections Ploos van Amstel invited a commission, which included the Mayor of Amsterdam, to his studio on the 8th of October, 1768, to initiate them into the mysteries of his process. They testified: 'That his figures were neither engraved by means of the burin, nor etched with a point, nor hammered with a puncheon on to the copper, but that they were rather produced by means of certain "ground-" varnishes, powders, and liquids; that he by no means coloured the prints by hand, but printed them entirely, and not with water colours but with oil colours.' This savours most of aquatinting, but aquatinting will not account for all of his plates.

This testimony, by the way, is interesting enough as an historical document, since it tends to prove that they were not over-punctilious in matters of hard and unswerving veracity in those days. I have had an opportunity of comparing several different copies of some of Ploos' prints, which had not been touched for over a hundred years, and were in the same state as on the day they left his press. They did not tally, as they would have done had all the colours been actually printed, and on some of them traces of the brush could undoubtedly be discovered.

Digitized by Google

CHAPTER XII

THE PLANOGRAPHIC PROCESS. LITHOGRAPHY

THE art of lithography depends upon the chemical antagonism existing between fat and water upon a surface that possesses like affinity for both.

As the name indicates, this surface was originally (and is to this day in the majority of cases) stone. Suitable kinds of stone have been found in various parts of the old and new world. By far the best, however, is brought from Solnhofen, in Bavaria. This stone is a form of calcium carbonate or carbonate of lime. It is cut into slabs of different sizes, each from two to three inches in thickness.

The lithographic draughtsman draws his design upon such a stone with an ink that contains tallow, wax, soap, shellac, and fine Paris black. When the drawing is finished a very weak solution of acid is poured over the stone. This 'etching' of the stone is generally done by the lithographic printer, and very often he spoils the work. For it is a difficult affair, and requires an accurate knowledge of the strength of the acid, which when slightly too strong will wash away the more delicate portions of the drawing. The solution decomposes the carbonate of lime in the stone as well as the soap in the ink; the lime and fatty acid thus set free combine to

Digitized by Google

form an insoluble soap. Furthermore, the solution of acid renders those parts of the stone which have not been drawn upon still more averse to accepting any fatty substances, and their resistance is increased by the addition of a solution of gum arabic. Before an inking takes place the printer moistens the stone every time with a sponge, so as to make sure that the gummed portions will perform their functions, for if the stone gets dry anywhere it will be ready to receive the fatty ink from the roller at that place.

If such a stone be inked with a roller, only those parts that have been drawn upon will accept the lithographic ink, while those that have been treated with acid, gum, and water repel it. Thus a method has been found to print from a block without resorting to the practice of either relief-cutting or intagliating.

The lithographic press consists of a running plate, covered by a thick sheet of felt: upon this the stone is placed face upwards, and the sheet of paper, with some extra 'backing' to soften the pressure, on top of this. Then the scraper is lowered from above to the stone. The scraper is a three-cornered piece of wood extending across the breadth of the press, with one of the corners protected by a strip of leather pointing downward. It is so adjusted that it can be moved up or down according as the stone is thick or thin. It is set fast along one end of the stone so as to exercise a pressure upon it. The stone is now run along under it, whereby the paper is scraped down against the inked surface, thus causing an impression. In steam lithographic presses the pressure is exercised by a cylinder in the middle of the machine. On one side are the inking rollers, on the other the moistening rollers, and the running plate passes to each

Digitized by Google

set between every two printings. It operates about ten times as fast as the hand press, and from 2,500 to 3,000 prints, or even more, may be made in a day of ten hours' work.

This explains the general principles upon which all lithography rests, but there are many details peculiar to each kind of work. Of all the different kinds of lithography, crayon drawing upon stone is the most common.

For the purpose of crayon drawing the stone must be given a grain, which is effected by first polishing it down, then sprinkling a little of the finest gravel sand over its surface, adding a little water, and rubbing a second lithographic stone, face downwards, over it in rotatory motion. If there were no grain, the crayon or chalk could make no mark upon the stone, just as ordinary crayon will leave no mark on glazed or coated paper. Lithographic chalk is made up of the same constituents as the ink above described, but they are made hard by being burnt and formed into sticks.

Corrections in lithography are always difficult on account of the antagonistic principles involved; but they are especially difficult in the crayon method. For if you have to erase a portion of the drawing, you scrape away the grain with it, and you cannot obtain the same grain at that place again.

After crayon drawing, pen drawing upon stone is, perhaps, the method most commonly employed. The stone is merely polished in this case, not grained. Some lithographers use quill pens, which they thin down so as to make them soft. Others prepare pens especially for this purpose out of very thin sheets of steel. Still others use only brushes, and do not employ pens even for the finest lines. Ordinary brush work may of

Digitized by Google

course be applied in combination with the pen drawing. Etching, inking, and printing are the same as in the crayon method.

There is another way of drawing in lines upon the stone by means of which effects are produced which closely resemble the pen drawings. It is sometimes called engraving on stone. The polished stone is given a thin coating of gum, and if then moistened and run through the press would not accept any ink from the rollers at all. The design is then scratched by means of points and gravers into this gum coating, laying the stone bare wherever there is a line. If the stone be inked now, the bared lines will accept the ink and the stone is printable in the same manner as before.

Splatter work, very customary in poster designing and other large lithographic pictures, is made by filling a short bristle brush with lithographic ink, and drawing a knife or other edge across it. As the bristles of the brush spring back from under the knife they spurt drops of the ink on to the stone. Inequalities in the splatter are filled up by means of crayon and pen additions, or by means of scraping wherever the splatter has been too heavy.

Perhaps the best lithographs that have ever been done are 'scraped' lithographs. The process bears some resemblance to mezzotinting, inasmuch as the artist works from dark to light. The whole stone is first covered with lithographic ink, and the lights are then scraped out of this black surface, just as the mezzotinter scrapes his lights out of the rocked grain. The plate is then etched, inked, and printed in the usual way.

Up to a comparatively recent date the cumbrous heaviness of the lithographic stones, which are not easily portable, was one of the drawbacks of lithography. The

Digitized by Google

LITHOGRAPH

Digitized by Google

[illegible] plied in combination with the pen draw[illegible] [illegible] ng, and printing are the same as in [illegible] [illegible] d.

[illegible] another way of drawing in lines upon [illegible] stone [illegible] s of which effects are produced wh[illegible] clos[illegible] [illegible] the [illegible] drawings. It is someti[illegible] call[illegible] [illegible] aving on [illegible] one. The polished stone is gi[illegible] a th[illegible] coating of [illegible] m, and if then moistened and [illegible] through the pr[illegible] would not accept any ink from t[illegible] rollers at all [illegible] e design is then scratched by means [illegible] points and [illegible] vers into this gum coating, laying [illegible] stone ba[illegible] [illegible] erever there is a line. If the stone [illegible] [illegible] ed no[illegible] the bared lines will accept the ink and t[illegible] [illegible] ne [illegible] [illegible] table in the same manner as before.

S[illegible] [illegible] er work, very customary in poster designing [illegible] [illegible] rge lithographic pictures, is made by filli[illegible] [illegible] bristle brush with lithographic ink, and draw[illegible] [illegible] r other edge across it. As the bristles of the [illegible] [illegible] from under the knife they spurt drops of [illegible] [illegible] Inequalities in the splatter are [illegible] [illegible] on and pen additions, or by me[illegible] [illegible] the splatter has been too heavy.

[illegible] lithographs that have ever [illegible] [illegible] ographs. The proce[illegible] bears [illegible] [illegible] ting, inasmuch as the [illegible] [illegible] ght. The whole stone is [illegible] [illegible] hic ink, and the lights are th[illegible] [illegible] surface, just as the mezz[illegible] [illegible] the rocked grain. The pl[illegible] [illegible] [illegible] rinted in the usual way.

[illegible] [illegible] ely recent date the cumb[illegible] [illegible] [illegible] phic stones, which are not eas[illegible] [illegible] ble, w[illegible] [illegible] drawbacks of lithography. Th[illegible]

LITHOGRAPH

Digitized by Google

Digitized by Google

Digitized by Google

actual drawing itself had to be done in the lithographic printer's shop, and such a thing as working directly from nature was not to be thought of. This became possible by the invention of transfer-papers. These papers are covered with a coating of starch and glue, or a size of parchment and flake white; they can be taken about more easily even than a copper plate, and the artist draws his design upon them with lithographic ink. The paper is thereupon pulled through the press, lying face downward upon a stone. Then it is moistened from the back and carefully stripped off; the drawing will be found to remain upon the stone. The paper must be a grained sheet if the design is to be executed in crayon. In addition to the advantage that the artist may now do his design comfortably at home, or out of doors if he like, this transfer process also reverses the design automatically and makes it come out right in the final prints—a fact which is of importance if the artist happen to have drawn a design where right and left have to be preserved. Again, one and the same design can be transferred from one stone to another, and a second, and a third, and so on. This would be done if a very large edition, liable to wear a single stone, had to be printed. We can accordingly say that by virtue of transferring there is practically no limit to the number of impressions that may be taken of any one lithograph. Engravings on copper, woodcuts, and zincos may also be thus transferred to stone.

The devices of the modern lithographer are, like those of the modern etcher, many, and cannot all be dwelt upon here. Like those already described, they offer only slight variations of the same main principle which underlies all of them, the antagonism of water and fat. The

Digitized by Google

lithographic printer is fully as important a factor in the production of the work as the intaglio printer. His actual printing is perhaps not so difficult a task, but he has to do the etching, and on this account is to be ranked rather with the intaglio than with the relief printer, who is a mere mechanic.

A word about colour printing, and we may dismiss the subject of lithographic process. When chromolithography was first attempted, the three-colour theory was given a trial, but it was quickly abandoned. The system of one colour for each stone obtains, and the registering, printing, etc., do not offer any important features that we have not already met with, excepting perhaps the so called Iris plates. These make an exception to the rule, and carry two, sometimes more, colours. When an Iris plate is to be printed, the first roller in the steam press which receives the ink out of the reservoirs is inked, say, at one end with blue, at the other with green ink. By the adjustment of intermediate rollers these inks are spread until they meet and gradually run into one another upon the final roller that actually inks the stone. Iris stones can, of course, be applied only in especial cases, but they are often of use in posters or designs in which the colouring is simple. For example, a landscape with a blue sky and a grassy foreground, both meeting in a hazy perspective, could be printed with such an Iris stone, and thus one stone economised.

Strictly speaking, the principle of chromolithography is not, as was stated above, one colour one stone, but rather, one tone one stone. For generally the chromolithographer builds up even colours which seem to us quite simple by super-printing two or more tones. Thus it happens that designs which seem to us to have but

Digitized by Google

eight or ten different colours will have taken as many as twenty printings. In exceptional cases the number of printings has reached thirty and over. The registering, though sometimes troublesome, is at least easier than in intaglio colour printing.

We have seen above that, had it not been for the intervention of chance, several of the intaglio methods would not have been discovered. The same factor is altogether responsible for lithography. Senefelder, its inventor, was experimenting with relief and intaglio printing, and hoped to find some cheap way of publishing his own productions. He happened to have a piece of Solnhofen stone, on which he practised reversed writing and which he used for grinding his tools. One day in 1796 he wanted to jot down a laundry bill, and found no paper at hand; so he wrote it upon this stone, with an ink containing wax and soap. As these resist acids, it occurred to him to try to etch the stone and see whether he could make a relief block out of it. The final result of his attempt was that he produced a block capable of being printed without having been either relieved or intagliated.

The new process offered scarcely any of the difficulties and annoyances which had troubled the woodcutter, engraver, etcher, etc. It was much more rapid and much less expensive in the actual working than any other process. As regards printing it was at least cheaper and quicker than the printing of copper plates. Consequently, it fairly jumped into popularity with the publishers and illustrators.

It also became popular with the artists. For the statement, misapplied in the case of etching, holds thoroughly good for lithography, and we may say, 'Anyone who can draw can make a lithograph.' To handle the crayon is

Digitized by Google

about the first thing that art students learn at school when they draw from casts and models. It makes no noticeable difference whether you draw upon a stone or upon paper. The etching business was always done by the practised printer and not by the artist himself. Consequently, there was not the slightest detail of process to be learnt.

The absence of technical difficulties is, moreover, in the eyes of the artist, perhaps the least important advantage which lithography possesses over the older methods. There was no need to learn a new way of looking at nature: no new form of conception was required. The artists who lithographed were painters, and painters work imitatively—that is, they reproduce surfaces directly by means of surfaces. Crayon drawing does this likewise; and so the lithographic artist was not compelled to undertake the difficult task of reconstructing nature, of translating its surfaces into an intelligible and decorative system of lines.

This comparative easiness proved within a very short time after its invention to be the bane of lithographic art. In the first place, it opened the way for men of minor talents, who had no ideas, no artistic impulses of their own, but who could merely and servilely copy either nature, or an oil-painting of another master. These crayon copies on stone are not a whit more interesting than the numberless crayon studies on paper that the academy student makes in order to learn technique. They lack character to the same extent. But while the student keeps his drawings carefully from the eyes of the public, these lithographs were unfortunately published, and, what is worse, they make up perhaps nine-tenths of all lithographs that have ever been given to the world. Even when superior artists engaged in this style of

Digitized by Google

lithography, they only proved that what can be attained without any intellectual trouble and energy in art is generally not worth the attaining. In the hands of such men as Raffet, Chevallier (Gavarni), Delacroix, Vernet, and numerous others of repute, the art sinks completely to the level of illustration. It was quickly and almost entirely superseded by photography when that appeared. If an art can be supplanted and obliterated by a mechanical process its qualities must apparently have been very meagre ones.

However, all lithography is not of the usual sort, and we are able to hail with joy some instances where the artists have undertaken lithography as an art and not merely as a form of illustration; where they lay stress upon the new manner of saying things, not upon the new things said. Adolf Menzel, the famous German draughtsman, now an octogenarian, is one of the most noticeable among this number. As early as 1851 he published his capital 'Versuche auf Stein mit Pinsel und Schabeisen,' a set of disconnected lithographs done in the scraped manner and having a pronounced character of their own. Charlet and Fantin-Latour should perhaps be mentioned along with him. Their prints and those of a few others are the oases in the desert of the usual lithographic attempts. It is only within the last two or three years that lithography is beginning to turn into a true, personal art. Original, creative artists have turned their attention to this medium in a body, and have produced new, peculiar effects of various kinds, no longer imitative of anything else or lagging behind the other graphic arts. In France, Lunois heads the list with his beautiful scraped lithographs. Germany boasts of a number of able men who have taken up the pen-drawing method

Digitized by Google

principally. English artists cultivate still another feature of lithography, the attainment of that quiet, silvery-gray tone, in itself a source of enjoyment to the eye, exemplified by the splendid specimens of Legros, Whistler, etc. Thus the dreary reproductive lithography, after old and new, good and bad paintings, is being beaten all along the line.

Colour printing in lithography underwent much the same experiences as black-and-white lithography, except for the fact that matters were somewhat less propitious in this field, since the development of the practice was not effected by the artist but by the mechanic, the lithographic printer. The easiness of imitation led him to glide rapidly into vulgarity. There has been a revival here, too, within the last couple of years, and, strangely enough, the impetus came from a quarter which is itself generally deemed vulgar—from the poster. The modern poster, however, is not vulgar as an art, though it often is as an illustration. It, too, depends upon the circumstance that creative artists began to take interest in it. They could not condescend to employ the marrowless system of building up a colour by the super-printing of many tones. This method completely effaces all the character and individuality that the artist may have put into his design. It obliterates the handwriting, so to speak. The modern designer prints his poster in colours, not in tones. He does not imitate nature, but composes an original colour-scheme, a harmony of his own, and this, his creation, is the vital point of the poster as a work of art.

The same principle holds good with reference to other colour lithographs done to-day. The pernicious striving after realistic colour which has made the

Digitized by Google

'chromo' a byword of all that is horrible has been fortunately—and, let us hope, for ever—abandoned.

Great ingenuity is often displayed in the manner of overlapping stones, so that by clever arrangement two or three inkings will be made to produce four, five, or more colours on the final print.

Here too, then, as in the other departments of the graphic arts, we can confidently speak of a renascence, and hopefully look forward to the achievements with which the near future promises to react upon the stagnation prevalent during the middle period of our century.

Digitized by Google

CHAPTER XIII

HOW TO DISTINGUISH BETWEEN DIFFERENT KINDS OF PRINTS

PEOPLE who look at prints without being able to tell them apart may certainly be said to be groping in the dark. For the purpose of extracting æsthetic enjoyment out of a print it is as necessary to recognise it as an engraving, a lithograph, or a woodcut, as it is in a drama to understand, not only the literal meaning of all the words, but the poetical thoughts that they combine to express.

By making the reader acquainted with the way in which all manner of prints are made, we have enabled him to distinguish between the different kinds. For it is only upon the strength of such knowledge that he will be able to discriminate between them. There are a number of outward signs by which each kind may be recognised, indeed, but in many cases they may have been removed, and under any circumstances they will not be an entirely reliable or sufficient guide.

The first distinction that one must be able to make is whether the print in hand is a woodcut, an engraving, or a lithograph, or, better, whether it is a relief print, an intaglio print, or a planographic one. If it lie intact before us this is not difficult. The relief print has no plate mark, the intaglio print has one quite clear and distinct, the plano-

Digitized by Google

graphic one has a very slight mark, not always to be discerned when the print is held directly before us, but which can easily be detected upon holding the print in a line with the eye. We then see the paper pressed smooth just as far as the stone extended.

Very frequently, however, the prints we find placed before us are not in perfect condition; sometimes they have been trimmed within the plate mark, and thus this guide is gone.

A second test, then, is to feel whether the ink stands in relief upon the paper, or whether it seems as flat as the paper itself. In the former case the print would prove to have been printed from an engraved plate; in the latter, it must be either a lithograph or a woodcut. Between these two, the colour and quality of the ink is a sign by which the difference may be recognised. Relief printing ink has always a dry, deep-black look, the chemical lithographer's ink is always more or less grayish and greasy. Besides, in the lithograph the paper will feel much smoother, as its whole surface is pressed against the stone, while the relief block would tend to make the paper if anything more uneven. Thus, if you look at the reverse side of the print and see that some of the lines have been pressed into the paper a little—it can be detected best in the case of border or other lines that stand well out by themselves—you will know that the print has been taken from a relief block, for only in this process could such an impress be made.

The fact once established that the print is a woodcut, it will not be difficult to distinguish between the old-style woodcut, with its open work and pen-drawing effect, and the new-style wood engraving, with its uniformly dark surface and chiaroscuro. In mixed prints crossing white

Digitized by Google

lines always betray the presence of the graver. Dotted prints of the fifteenth century are, of course, recognisable at once by the presence of white dots or patterns. In the same way, when one has recognised a print as being a lithograph, there is no further trouble about discovering whether it has been drawn with chalk, with a pen, with a brush, splattered, or scraped.

With regard to intaglio plates the matter is more complicated, as there are so many different kinds of engraving, some of them resembling one another at a first glance.

If the print shows lines clear cut, each of them running to a point, it is a burin engraving. If the lines are not exactly rugged, but not clean cut, each line preserving one and the same degree of width throughout its whole length, the print is an etching. Dry points are characterised by the extreme delicacy of the lines, which are bordered in places by velvety blackness. Within this blackness a minute white line may, in excellent impressions, often be seen. This is the impress of the ridge of the burr, from which the printer wiped the ink, while he could not wipe it from under the side of the burr.

These are the principal signs by which we can distinguish different line prints from one another; to detect them a magnifying glass must often be used. But it must be admitted that they are not of themselves infallible. The burr may have been worn away, for example; or the lines of a print may in the course of many years have been rubbed to such an extent that when we pass our finger over them we do not feel the slightest elevation, and, consequently, cannot by this means tell whether it be an intaglio print at all.

After all, the principal means of recognising prints con-

Digitized by Google

sist in the analysis of the character of the line, in recalling how the burin, the point, the knife, the pen, respectively work. If the lines are firm and accurate, many of them in well-studied parallel layers, and the crossing sets well systematised, we know that the print is an engraving, for the burin, digging its way slowly and under an exercise of great pressure, can move only under restraint and in a well regulated manner; each line looks as if it had been well thought out. On the other hand, if the lines are nervous, hasty, and 'zigzaggy,' quite free to go off suddenly in any direction, then the print is an etching. For the point, which has only to remove the etching ground, is in no way hampered and is not bound down to any rules. The line of the woodcutter is something between the two; it is drawn by a man whose hand is about as free as the etcher's, but it is cut by a man whose hand is a good deal more hampered than the engraver's. Upon the whole, it is too broad and simple to be mistaken for that of the burin; its edges are too clean cut to cause it to be confused with that of the point and acid. Besides, the woodcutter would find it extremely difficult, if not impossible, to imitate the close cross-hatching of the burin engraver,[1] or the casual rapid play of the lines of the etcher. If the line varies abruptly in strength and quality, if there is a preponderance of strokes in one direction, and if it is quite freely, though perhaps not hastily, drawn, the print is probably a pen lithograph. The crayon line cannot, of course, be mistaken.

Thus the thing to do, when looking at a print, is to ask one's self, Does it look as if it could have been done

[1] The white-line wood engraver can, of course, attain this cross-hatching too, but his work could not be confounded with that of the burin copper-plate engraver, since his system is white and the engraver's is black.

Digitized by Google

best with a graver, a point, a knife, or a pen? After a little practice each manner of engraving, etc., will then be recognised at first sight, without taking refuge in the magnifying glass or other help; these we need fall back upon only in special instances. Cases do occur where it seems difficult or almost impossible to come to a decision. But, although numerous and irritating enough, they probably do not amount to one in ten thousand of all prints ever made. Of course, if an engraver wanted to, he could deceive us and make his print appear as if it had been done by a different method than the one employed. Fortunately, this occurs seldom, and hardly anyone wastes his time over such an endeavour; and even should he do so, his work is generally a failure when we examine the print very carefully. Bosse, an etcher of repute who lived during the seventeenth century, and was the first man to publish a careful manual on the art of engraving and etching, tried to imitate line engraving by etching according to a very regular system. He even went so far as to draw out his lines to a point by stopping the ends out and by dry-point work. But even this wilful deception—practised, by the way, not because he wanted to palm his works off as engravings, but because he considered this method as an improvement upon common etching—is easily detected with the aid of a magnifying glass.

Passing from line to surface methods, we need discuss only the intaglio methods. Surface woodcuts are hardly to be found without at least some few lines in them. Most of them are in colours, so-called chiar-oscuro prints, and they print through at the back. Surface lithography, too, is principally in colours. The crayon drawing treated as a surface is recognisable at

Digitized by Google

once by its close resemblance to ordinary crayon drawing. For the rest the surface in lithography is characterised by lacking texture qualities and by the fatty character of the ink.

Crayon prints (crayon work in lines) and pastel prints are the two kinds of engraving most easily recognised, since they appear exactly such as their name would lead us to expect. If we find a print composed of rows of little dots, or dots set according to some other regular arrangement, we know that it has been done by the aid of the roulette. Punched prints could only be confused with stippled ones. They are much more clumsy and unsatisfactory in the workmanship, the dots are round, and, being rather shallow, they show up gray. The dots in stippled plates do not appear perfectly round when examined through the magnifying glass, especially the larger ones. The pictures are modelled to a much higher degree than it would be possible to do by means of punching.

The two principal surface methods of intaglio printing, aquatinting and mezzotinting, may be told apart at once, since in the latter the tone is velvety, rich, and deep, while in the former it is shallow and even. In mezzotints we find delicate transitions from a lighter to a darker shade; in aquatints there will only be a few different degrees of shade, each one of them abruptly circumscribed and not running into the others. If you look through a magnifying glass at a spot in a mezzotint which has been scraped down about half, you will see a number of miniature crosses. An aquatint tone seen through the same glass appears speckled, or like a very fine miniature net. Crackle is easily recognised as such, while the sandpaper tone is rather difficult to describe.

Digitized by Google

It bears a good deal of resemblance to the rocked mezzotint tone, being also susceptible of gradations, but it is not so deep and soft, and it is smudgy at times.

Perhaps the most difficult thing about toned prints is to recognise whether there has been any tone at all worked upon the plate, or whether the tint that we see upon the paper is there merely because of the printer's not having wiped all the ink away from the surface of the copper. Of course, if we should happen to have two specimens of the same plate laid before us this printer's tone would be recognised at once, for he cannot leave the ink upon polished portions of the plate exactly the same in two instances. But when we see only one proof, it is sometimes very difficult to distinguish between a delicate aquatint, a sulphur tint, and the plain retroussage of the printer. It will be remembered that some plates, especially etchings, require this printer's toning, and if he can apply it skilfully and with taste it is a rare virtue. Generally speaking, this printer's tone can be detected by some casualty or other, by some irregularity that could not have happened if the work were on copper, and by its absolute want of grain.

Digitized by Google

CHAPTER XIV

HOW TO APPRECIATE AND ENJOY PRINTS

IT is a popular belief that art is a matter of taste, and that taste is an inborn quality in everyone. It follows that everybody has a right to his or her opinion, and moreover that the opinion of everyone is of like value.

It is strange that within the whole range of human interests such an utterly nihilistic theory has been deemed applicable to one only, and that perhaps the highest of them all, to art. In everything else work or culture (which is merely an expression for work that has been accomplished) entitles a man to his position among his fellows. His opinion is valued according to the amount of labour that he has spent upon cultivating that opinion.

In the matter of a big factory building, would anybody for a moment pay the least regard to the remarks of an outsider who should say that architect and engineer did not know what they were about? Suppose a person to have fractured his arm, would he apply for help to the first man whom he met in the street, or would he go to a surgeon of long training? Yet building, engineering, and surgery cannot be considered as intellectually refined and delicate processes as art: the first man in the street might be more likely to know something with

Digitized by Google

regard to them than with regard to it. Imagine an astronomer discussing the movements of heavenly bodies in a company of well educated people; would anybody in that company who had never looked through a telescope, and had never made an involved mathematical computation, dare to rise and say that the astronomer was in the wrong? But suppose that in the same company a man who has devoted a lifetime to the study of art should maintain that Rembrandt's 'Susanna Bathing' is one of the most beautiful of pictures, and then suppose a manufacturer, who manages to visit a gallery perhaps once or twice a year, rises to answer that *he* thinks Rembrandt's nudes ugly and bad, and that he believes Adriaen van der Werff's paintings are much finer. Probably everyone in that company would consider it an open question which of the two was in the right.

I am of opinion that æsthetics are based upon knowledge, and are as much a science as astronomy or natural history or anything else. We are not born scientists and we are not born with taste—that is, knowledge in regard to fine art. Of course there are geniuses who need to learn very little from others, and who have a natural inclination for the science of art, as others have for the science of mathematics. But they are not of more frequent occurrence in the one field than in the other. The great mass of people must learn from one who has a right to teach, and such a one can be found only among those who have devoted a lifetime to the science.

The great majority have *eo ipso* no more right to an opinion on art than they have to one on higher astronomy. They should try to arrive at this conclusion at an early period, for then they will make efforts to improve their

Digitized by Google

taste, and whoever has devoted all his time to the study of art will then be able to further them.

The science of æsthetics is still young. Perhaps even at the present day there is no one who has a right to assume such a position of teacher. But until his presence is rendered possible by the determination (at least in principle) to be guided by him when he does come, his advent will never occur. And meanwhile, until he appears, the words of those who are better prepared than the great majority have a fair claim to being attended to.

People will answer: If we are to subordinate our untrained opinion to a trained one we are at a loss whom to follow, for among those who maintain that they have a better right to speak there is much difference of opinion. There is still more divergence among natural scientists, and yet we do not hesitate to submit to each and all of the opponents. There are, for instance, perhaps as many doctors who condemn vaccination as there are doctors who believe in it. Half of them must be wrong, and yet no one hesitates to submit to the regulations of a doctor when he is ill. Their antagonism on especial points does not lead us to lose our general confidence in them.

To be sure, the science of art remains entangled still, and there seems to be more room for opposing theories with regard to it than with regard to anything else. So many attempts have been made to get at its soul, to define its limits, and to explain in what manner it affords us enjoyment. It seems at first indeed as if it were almost impossible to establish anything with regard to it, as if its essence were as variable as its forms, and as if it were beyond all subordination to theory.

But a theory may have some use even if it be not so

Digitized by Google

logically deducted as to meet all cases. For from the attempt of its author to formulate a system out of the pleasurable sensations which he has received from works of art, we shall glean at least one way of enjoying art. This may lead us to adopt similar ways, or it may lead us to adopt different ones. At any rate we may be induced to think about the subject, and if in consequence our pleasure becomes a conscious one in the end, it will have been so much heightened. That is the possible active good of all such theories.

Let us compare a few of them.

Some people say that the reason we enjoy art is because it is the incarnation of beauty, of a certain kind of perfection which stands over and above nature.

To the actual forms of nature they object that they are always accompanied by casual or temporal features. Thus, not being a homogeneous essence, the natural forms are imperfect, and consequently not beautiful. Should someone, however, choose from all forms of nature as much as will meet every single one in its essence and neglect every one in its chance imperfections, he will then have attained an ideally perfect form, he will have gained essential beauty.

In a word, for the Idealist beauty consists in absence of casual imperfection, and it is attainable in art, which depends upon a process of selection. The artist's chief aim must be to choose and create something new, not to imitate that which already exists.

So far, so good; but let us investigate the manner of creation which the idealist has mapped out for the artist.

Perfection of any kind is not tangible; it cannot be experienced by any sense, it can only exist in thought. It is an abstraction based upon reflection, and whoever

Digitized by Google

says that the principle of art consists in the search after perfection has made logical abstraction its basis. He says that the artist must first *think* his picture, and then paint it. Our thinking is done by the aid of words. Painting would therefore be the mere illustration of words by means of a brush and colours. The specific art of the painter would accordingly consist of imitation, while what he does of creation—namely, the thinking out of his picture—is identical with that form of creation which obtains in all literary efforts.

The creation of beauty, as the Idealist demands it, is after all only a certain form of imitation, and no true creation in the end. But it seems impossible to grant that there should be no specific form of creation proper to art alone, and that art should consist merely in imitation—that is, the illustration—of thoughts.

With artists of the idealist class the logical process is the main thing, and, when consistent, they must reach the standpoint of Cornelius. When somebody called his attention to the fact that he had drawn a hand with six fingers on one of his huge Campo Santo cartoons, he exclaimed: 'And if there were seven, how would that injure the idea of the whole?'

Now, the idealist theory—propounded for the justification of a short, recent period in the history of art—does not explain any of the great masters of former times, and leaves whole departments of art out of consideration altogether. In the works of the truly great artists—the Buonarottis, the Titians, the Bellinis—there are no abstractions, no logical ideas apparent. They do not strike us as being the illustration of thought. The power exercised over us by them is not one that could be exercised by words as well or better. There is a mysterious power of

Digitized by Google

creation embodied in them that bears no relation to logical thinking. Moreover, none of those masters ever dreamt of choosing an abstract perfect beauty out of an assemblage of natural forms. We glean from the numerous drawings and studies that have been handed down to us along with almost every famous picture, that these men chose only one form and copied it rather narrowly, never altering any casual defects of the model.

Again, according to this theory no portrait could well be considered a work of art, as portrait painting is not based upon that process which seeks to gain beauty by means of selection. Finally, how does it happen that many works of art which by no means avoid the casual imperfections of nature—for example, many paintings of Velasquez, Hals, and Rembrandt van Rijn—have withstood the criticism of many ages, and have been registered among the finest works of art in existence?

It is plain that the theory is open to endless objections, not the least of which is that it sets up a dogma for beauty and maintains that art must live in accordance with it.

Idealism testifies to a low stage in the practice of painting. It was called forth by the circumstance that the artist had given up the habit of hard work. He then thought out his theory in order to suit his practice. When, some ten to fifteen years ago, artists began to work seriously again, coming to the conclusion that art cannot live on principles and leisure, a new theory was soon developed. Work, in the case of the artist, means strenuous study of nature. The theory was again fitted on to the practice, and came to be realism. The reaction was all the more extreme because it had to fight so hard against the lingering idealistic views.

Digitized by Google

Theories must, of course, always be made to agree with practice, for they are no more than the generalisations of practice. But it is a question whether they may be made to fit the practice of a brief space of time, or whether they should be derived from the practice of ages.

As theorists the naturalists are, doubtless, not a whit better than their predecessors. According to them, art consists merely in reproducing nature in some other material; the material in the case of painting being canvas, brush, oils, etc. The artist's aim must be to come as close to nature as possible, and he must sink his own personality in the attempt.

There are a number of desperate conclusions to which the acceptation of this theory reduces one. In the first place, if the reproduction of nature is the essence of art, then choice of subject is an absolutely irrelevant matter, and the painting of a filthy pigsty may be just as important a work of art, if it reproduce nature well, as the representation of the Crucifixion on Mount Calvary. In fact, a statement to this effect will often be heard, even to this day, from the lips of the ultra-naturalists. But it is beyond a doubt that, other things being equal, we do attach some importance to subject in art, and, as long as there have been pictures, they have been classified in importance according to subject. If we have the picture of a human being and one of a beetle before us, the former will afford us greater artistic enjoyment, provided both have been executed with equal skill.

If, indeed, the essence of art consisted merely in its being an imitation of nature, it would be hard to explain the pleasure we take in art. For the objection, held up by the older idealist, that one can never approximately attain the real naturalism which is set up as a goal, is

Digitized by Google

a very sound one. We can never be deceived by a painting and take it for reality. Some tricksters have painted a coin on a panel so as to make us, under certain conditions, perhaps mistake it for the real object. If we are pleased, we are pleased by the cleverness of the trick; we are not moved by it as a work of art. If we analyse our sensations with regard to the standard paintings, which have been established as such by the consent of the most refined taste, we shall discover that our enjoyment does not depend in the main upon a comparison between the painting and nature. Else how could we enjoy the art of Michelangelo Buonarotti, of Claude Gelée, or of Rembrandt van Rijn, all of which is far from being an exact copy of nature? Copying nature exactly, and striving for nothing beyond—in other words, imitating nature as the naturalist has it—is at best a futile aim, since it always falls short of success. It cannot be the true aim of an artist to strive for something he never can attain, and it does not seem plausible that the pleasure we take in art should lie in the direction of an unavoidable failure.

The naturalists attack the idealists on one weak point—their neglect of nature; a second class attacks them on another—namely, the importance that they attach to the logical element contained in each work of art. These purists wish to set art aside as a sense pleasure, and disassociate it from all the logical activity of our brain. For, they argue, if our enjoyment of the fine arts depends at all on thinking, then it can never be as great as that which we receive from literature, since here the logical activity of the brain has a much wider field. Just as the intensity of a sensation keeps pace with the degree of its unmixed purity, so a picture that appeals to our senses

Digitized by Google

only, and not to our sense, must give us a purer pleasure —purer because there is nothing to divert us while we contemplate it, and purer because the pleasure it affords us cannot be exactly given us by anything else. All this culminates in the theory that decorative art is the highest, is the only true art, and that all artists should strive after it.

The theory sounds excellent as long as it remains in the comparative stage ; as soon as we put it in the superlative, it fails us. If art be finer the more decorative and the less logical it is, then it must be finest when it is absolutely decorative. We should have to consider a Persian rug, or, better still, a panel harmoniously tinted with pleasing colours, but representing nothing whatever that our intellect could connect with any established idea, as the finest and highest work of art. It goes without saying that hardly one out of a million will accept it as such.

Thus it seems that the theorists of naturalism and of decorative art, though both improving upon weak points of the idealist, have not set up something of their own which can be unreservedly accepted instead. Their conception of the essence of art is erroneous, and consequently artist and public cannot be guided by their teaching.

Quite recently a new theory has been broached, based on the contemplation of early Florentine art, and which is in its nature physio-psychological. It maintains that our pleasure in the paintings of these old masters is grounded on the fact that they stimulate our tactile imagination, especially with regard to the drawing of the human figure. By painting a figure in a higher degree of realism than it actually possesses in nature, they awaken our sense of touch to a greater degree of activity, and thus make us

Digitized by Google

feel as if our physical powers had suddenly increased. For example, we may not be able to recognise a human form in its full plasticity at a certain distance; they painted it more 'rounded' than it really is, and thus as they paint it we see it better than we do in reality.

It is an ingenious theory, but it seems to be very restricted in its applicability. Grant for a moment that this is indeed the reason why Giotto's pictures afford us pleasure; it can be used as an explanation only in the case of very few other masters or schools. Will the theory account for the delight that we get out of the works of a landscape painter like van Goijen, or from Mantegna's Paduan frescoes? Will the theory be found applicable in the least degree to Japanese painting? Surely no one will deny that we find keen enjoyment there. On the other hand, the 'Romanist' sixteenth century painters of the Netherlands bring this principle of plasticity in figure painting to a climax. So does the modern chromo! If Giotto stimulate our sense of touch twice as much as the natural object does, then they do twice as much as Giotto. Accordingly we should derive twice as much pleasure from their works as from Giotto's, which is certainly not the case. On the contrary, we hardly find it bearable. It seems to me that they prove the invalidity of the theory.

I should say that we admire Giotto for something else, that we esteem him in spite of, rather than because of, his high tactile and mobile qualities. For they may be looked upon as a sign of weakness. The original painter was at first indeed an ape, an imitator of nature, before he grew to be an artist. He played the part of a child, and, like a child when it begins to draw, he overdid the thing. He was conscious of the fact that he was not

Digitized by Google

able to hit the mark he aimed at, and so, from fear of failing, aims higher and shoots beyond. He wants to make things plainer, more real than they really are. In consequence of this the early medieval painter, who figures in the infancy of the history of modern art, cannot picture a scoundrel when he tries to paint Judas. He distorts the figure into a caricature, which is ridiculous rather than loathsome. Thus too Giotto, for fear of not reaching the natural plasticity, makes his figures more plastic than they should be. The exaggeration is the result of weakness, and cannot be the source of our enjoyment of art. As soon as ever the history of painting shows an increase of technical skill, the artist's anxiety to get things 'like' wanes, the mere imitation of nature loses its primary interest, and the intensified realism subsides.

Thus, if we grant the heightened realism of Giotto, I believe we must consider it a failing, due to the circumstance of his possessing no great degree of technical skill, and must not think that it is the source from which our enjoyment springs. Besides, the consideration of tactile values will always be an unsteady basis for an art theory, on account of the subjectiveness involved. Many may agree, upon consideration, that Giotto stimulates their sense of touch; as many, probably more, will deny this to be the case.

To me, art seems to be the manifestation of human will exercised over nature at large.

When a picture presents us some feature of nature, clearly recognisable as such, but upon which some one human intellect has impressed its stamp, then it is a work of art, and I believe that the simultaneous intertwined presentation of the two great factors of the world—mind and matter—is what creates in us the distinctive art enjoyment.

Digitized by Google

Nature is one thing; human intellect is another: art is the union of both. As long as painting remains the mere objective manifestation of nature, which during the recent spell of naturalism was deemed the sole object of art, it falls short of its original, and surely cannot stand proudly upon this defect as high art. When it is merely the constructed effort of the human mind, it is only an illustration, only the translation of words, and thus again only an imitation which falls short of the original. But when it is nature that has passed through the mind of one human being and has received its impress therefrom, it appeals in like manner to our senses, which love to see their sensations reproduced, and to our intellect, which loves to discover traces of itself in the work of art. It is no longer an imitation; it is unlike anything else, and consequently does not fall short of anything else.

If we consider the works of all the great masters that have ever lived, they all tend to prove the validity of the theory. We do not look merely for the reproduction of nature in their pictures, we who are continually in contact with nature itself. It is the personality of the painter as it appears in his conception of nature that we look for, and that we enjoy. Of course the image of nature must be there too, and it must be a good one. The more perfect it is, the better it is for the work of art. It is an *a priori* demand that the artist must be able to image nature well; how else should he be able to impress his own individuality upon it? But imitating nature is only the first component of artistic creation; exercising your will upon it, forcing it to appear as you see it, is the second; and both are equally important, if indeed the latter be not the more important of the two. The men out of whose life-work a strong individuality, an

Digitized by Google

overpowering character, shines forth, such as Mantegna, Dürer, Michelangelo, Rubens, or Rembrandt, are the masters whom we place at the very summit of art; those who have infused but little of a personal charm into their images of nature make up the thousands whom we range as artists still, but of a lesser rank.

This theory provides a ready answer for numerous questions which were troublesome to the upholders of the other theories. Thus in what way can either idealist or naturalist account for the enjoyment we take in caricature, or in Japanese and old Chinese painting? These are simply all different forms of man's forcing nature to obey his will, making it personal and subjective. Again, the circumstance that we classify paintings according to subject, and (to repeat the example adduced above) rank portrait painting above still life is accounted for. In the portrait there is greater scope for the manifestation of intellectual will than in the painting of a dead beetle, more individuality in the portrayal of the Crucifixion than in the painting of a pigsty, and thus, other things being equal, we have a strong motive for ranging the one above the other.

But, above all, this theory contains no categorical imperative for the artist, and may lay claim to catholicity as one of its good features. The naturalist commands the artist to cultivate the closest study of nature and let all else alone. If we allow ourselves to be swayed by him, should we not have to discard a great mass of masters who give us great pleasure, simply out of respect for the theory? The idealist bids the artist to evolve an abstract beauty as the aim of his art. How little of the work of the great geniuses can be made to concur with this order, even by dint of sophistic reasoning! But whoever

Digitized by Google

agrees with me that art is simply man in nature will be at a loss as to what directions to give to artists. For if they are not men of themselves, it is no good bidding them be men; and to tell them that they must have the forms of nature at the command of their brush is like telling a farmer that he must plough his field if he wants to harvest. The possibilities open to the artist who exercises his will upon nature are unlimited; not only can he exercise it in endless different directions, but each man's will will be different. We need only think of a few examples to see how wide a range we enjoy. Bellini, Watteau, Manet, Millet—all of them present us nature as seen through their mind's eye; but with one it is especially directed to problems of light, with the others to problems of spirit, of technique, and of mood, if I may use the word to express the untranslatable 'Stimmung.'

An æsthetic theory ought indeed never to be given as a piece of practical advice to the artist, for it is not *ante* practice, but *post* practice, and is related necessarily only to that which has gone before. But it may be used as a guide to the public; and if, on the one hand, we all agree that it is a bold thing to try and map out a path for artistic creation, we shall, on the other hand, find even artists willing to agree that theories should be used for the improvement of public taste.

The public, to be sure, may find some categorical imperatives in this theory.

Above all, give up attaching so much importance to 'likeness,' when you are looking at a work of art. Likeness is imitation, is the tendency to deceive. Stringent observation of it leads to the barbarism of a wax-figure cabinet.

Give up looking for 'stories' in a picture. Stories—

Digitized by Google

that is, thought in the form of episodes—are not nature, but the product of the human mind. A man wishing to tell a story, or a joke, should use pen and ink, and not an artist's implements. For art is nothing but outside nature reflected from an individual's brain. Human thought reflected from an individual's brain is poetry or philosophy, and is communicable only through the medium of words.

Finally, make up your mind to receive a pure impression from works of art, stripped of all associations, and look for the artist in the picture rather than for the objects imaged. This last is an injunction especially needful to-day. The absolutely untrained public of course always compares the picture with nature and nothing more. But at present the spirit of the naturalistic school still hovers over us, and even the cultured public is apt to incline that way. Some twenty-five years ago it would have been necessary to guard against neglecting nature rather than against laying too much stress upon it.

I have dwelt so long upon theories of art in general because it seemed necessary to impress the reader with the idea that art is a thing that requires especial consideration, and that the culture which enables us to possess a fairly good judgment in matters of literature does not at the same time suffice to prepare us for problems of art.

When I enter upon the discussion in which I try to say how the sub-department of black-and-white art should be looked at, in what manner we can understand prints and extract most enjoyment from them, I shall not start from such a general point of view. On the contrary, I must start from quite a special one, namely, from the one that the artist takes in regard to his work.

The born artist never has to concern himself with

Digitized by Google

questions as to the essence of art. For art is just exactly whatever he will make of it, and nothing else. The power that creates lies dormant in him, and he need not come to a clear comprehension of it; it will work its way, he being unconscious of it. But there is something else concerning which he must come to a very clear understanding, and that is the use of his medium, his marble and chisel, his canvas or panel or wall, his oils or other colours, his pen, point, crayon, etc. As far as his efforts are conscious, they are directed towards the evolution of style out of the material at hand. He has to consider two things: one at the beginning—'What is the specific character of the material with which I am working?'—the other at the end—'What ultimate result can I attain with this material?' The attainable is what eventually must determine him in his attempt to develop style.

Every instrument with which anything can be made has its limitations, and is adapted to the production of special results. Artists must keep this in mind no less than all other men. But sometimes they neglect it, and seem to think that it is quite a matter of indifference whether they are to chisel or paint or draw or engrave a given subject. They commit the error of placing the desired effect before their mind's eye, and of then seeking to reach it without regard to the means to be employed.

If we consider the means of the graphic artist and ask what end can he attain with them, what limitations restrict him, we shall find among the first limitations that he can compass only a very modest degree of verisimilitude. In order to produce even the slightest grade of deception, an artist needs colour. A coin may be painted so as to make us stoop to pick it up. The very greatest

Digitized by Google

sculptor of the world could never have chiselled it in marble in such a manner as to make us mistake it for a real coin, nor could the finest draughtsman have drawn it in black and white with better success. Form alone does not deceive us. It follows therefrom that verisimilitude, a certain degree of which the painter must cultivate, is of much less importance to the sculptor, and to the black-and-white artist. For it cannot be their task to develop the handling of their material in a direction in which even a fair share of success is precluded.

The sculptor's art is the one which appeals to our sense of touch, and here one may speak of tactile and mobile values. This again is beyond the graphic artist. To whatever perfection he may attain, he can never rid us of the sensation that we have merely a flat sheet of paper before us.

What, then, remains for black-and-white art ?

It excites our fancy to replace by means of intellectual creation all the sensations that the sister arts call forth directly. The few lines, that in some manner suggest form and colour, act as a foundation upon which our fancy, with the help of association, builds up true form and colour.

To stimulate our fancy, to suggest—that is the proper province of the graphic arts. A black-and-white picture will be the truer and the more effective the more this principle is kept in view, the less any attempt is made to vie with other arts in which a greater degree of elaboration is admissible.

This branch of the fine arts, then, seems to appeal to our mental activity, depending upon a process of intellectual association. Herein it clearly stands in direct opposition to painting. To be convinced of this we

Digitized by Google

need merely recall to our mind how laborious, heavy, and unprepossessing the huge historical paintings of men like West, Gallait, Piloty, appear to us, while, for example, the exquisite historical drawings of Menzel, which illustrate the deeds of Frederic the Great, never cease to give us pleasure. Or, again, we need only reflect upon the fact that painted jokes are always odious and flat, while black-and-white caricature can give us keen artistic pleasure.

The true creative artist will ever keep this in mind when he enters upon the field of black and white. He feels instinctively that he must produce something which no one, employing other means, can produce. But the reproductive artist, who has not the holy fire of genius within him to drive him on, mixes up matters and slips into imitation. As long as original artists practised woodcutting, we could boast of an art that stood out clearly defined upon its own merits, having its own principles of design, and its own decorative laws. Later on, the reproductive artists took to making woodcuts, and they eliminated vigour and spirit from the art. In their hands it changed into an imitative craft, which tries to reproduce the elaborate chiaroscuro, the diffused light and fine gradations of subtle half-tones, as these obtain in oil-painting. The white-line engravers of our day are very proud of their work. They think it can well bear comparison with that of Dürer, and they call our attention confidently to the imperfection of his aërial perspective, to what they deem the lifelessness of his figures. They have no idea that Dürer's woodcuts represent the culminating point of style, that he has actualised every possibility that lay in the legitimate use of his material, that nobody can get a knife or a block to do more than

Digitized by Google

he did. Their own efforts, on the other hand, clever and captivating as they may seem to the uncultured eye, are wayward vagaries of style. What sense is there in painfully struggling for diffused light and chiaroscuro, when the very soul of what you are driving at, when colour, is beyond your reach? Your work remains at best only a black-and-white shadow of what you desire it to be. Such attempts are comparable in a way to a clown who trains a pony to ride a crudely constructed bicycle. The sensible master of the horse will train it to develop those feats of agility and swiftness which are a potentiality in it. Many an eight-year-old child can outbicycle a horse. But no human being in the world can compete with its speed and its agile steps. Many a dauber can get a finer chiaroscuro on to his canvas than the peer of white-line woodcutters on to his block. But the decorative power and the vigorous character, as exhibited by the great masters of the old style woodcut, cannot be put in the shade by any other artist whatever.

If we must even condemn white-line woodcuts as an aberration from true graphic style, what must we say of such processes as monotyping, or spongotyping? They are nothing less than barbarous solecisms of style. It is the object of graphic art to be as far removed from photography as possible, not to resemble it to a dot. An artist worthy of the name will never try to confuse you with regard to his means. He will not, like the chromo-manufacturer, place something before you of which you cannot for the life of you divine how it came to be. On the contrary the painter, by displaying clever, dashing brush work, will lead you to the consideration of his method, and will want to put all things necessary in

Digitized by Google

your hands, so that you may form an opinion as to whether he understands the handling of his material or not. In like manner the graphic artist naturally wants to show that his effects have been produced by certain means; he does not want to disguise these means. He does not, like the spongotyper, want to get at an effect by spurious means. The spongotyper is a man who tries to paint without colours, a man who tries to sing without emitting sound: his labour lacks the beauty that the accomplishment of design brings with it, it is like a cloudy day in spring.

I am inclined to go still further, and to pronounce all surface techniques in the graphic arts to be fundamentally nothing more than stylistic anomalies. It is true we do not always apply the highest criterion, and so it happens that we find beauty in mezzotints—especially if the mezzotinter brings the velvety softness, which is the principal treasure that lies hidden in this process, to full effect—or in aquatints—especially whenever the artist has appreciated the distinctive characteristics of this process and makes the most of them. But there is an inherent deficiency in all these methods, namely, that they aim at direct imitation. In nature we find only surfaces, no lines. Now an inferior mind will naturally try to reproduce surface-nature, by surface-method, on the child's principle of like meets like. But true likeness, true reproduction of nature, cannot be accomplished, since the work is carried out in black and white only. So the man who attempts it falls short of his aim, and has not substituted anything of his own to counterbalance the failing. He only manages to go half-way, and discovers that his work is a contradiction in itself.

The basis upon which all graphic art must be built up

Digitized by Google

is line. Unfortunately the feeling for line is not born with us, and so but few persons comprehend the meaning of this expression. The untrained public jump at the nearest thing, which is comparing the work of art with the original object. If the reproduction is effected by means of line, it startles them. It is something new, in regard to which they have to come to some special conclusion, and that means intellectual labour, a thing which many people rather like to shirk when they can. Thus line, necessitating an effort in the person who wishes to appreciate it, cannot easily gain ground with the public. Yet it, and nothing else, is the making of true graphic art, for it introduces the factor of creative ability. Line is something that the artist must create, nature does not offer him the model which he has but to copy.

All the great artists in black and white, who possessed original ideas and who turned to this branch of the fine arts for its own sake, were masters of line. None but the men of meaner talent, and the mercantile copyists, content to live on another man's work, looked about for something easier, which they found in the various surface methods. These do not require genius; they cannot be developed into a style.

In each of the various departments of the graphic arts line possesses its proper character, and the aim of great masters has been to cultivate this character. Genius always makes a virtue of necessity. The knife of the woodcutter and his hard, unevenly grained plank-block are unwieldy material. A man of insight will not try to put them to delicate, sensitive tasks. He will feel intuitively that there is a grand energy, a simple strength, and a bold straightforwardness to be effected with them. That is the direction in which he will work. That,

Digitized by Google

too, is what we, the public, must look for when we wish to obtain the proper enjoyment out of the art of woodcutting, since woodcuts of such a kind are in keeping with the character of the art. To look for daintiness of execution, or nicety of tone, or delicate refinements of any kind, is to expect something foreign to the art. It is like looking for graceful and elegant dialogue in an Æschylean tragedy.

The engraved line is altogether different in character; a fact resulting from two peculiarities. One of these is that in its production a great amount of manual force is necessary, consequently there is nothing like perfect freedom of hand; the other is, that when naturally produced it runs to a point and possesses a clean brilliancy. These 'humours' of the burin were cultivated and led to the systematising of line, to presenting it bound by laws of regularity, and to the development of 'colour' effects.

In the same manner the line of the pen has its own character, dependent apparently upon mere chance features (such as that it splutters when moved backwards); and the line of the pencil, of the crayon, etc., all are distinctive.

But the real medium of line is etching. It is the art in which line has become hypostasised, in which the infusion of character into line rises to the highest stage of development. The lines of pen and pencil are variable in depth and size according to pressure; the line of the burin contains different contrasting elements; the crayon line is a porous trait. The etched line alone is homogeneous. There is a solid honesty about it; whoever operates with it must possess full command over his means, as there are no accidental resources upon which he may depend to help him out.

Digitized by Google

Original geniuses have taken to etching in preference to engraving, not, as many people believe, because it is a quicker or easier process, but because it imposes fewer conditions upon the artist. In engraving his fancy is bound down to a certain path which he must follow, for the burin has a pronounced inclination, and one that is stronger than all individual natures. Nobody can obviate the glossiness of the burin line, or surmount the restrictions of movement that are imposed. But etching knows no such shackles. Here the matter lies in a nutshell: this is your plate and your point; the line that you produce is one of absolute purity, and does not force you into any channel whatever. Now see what you can make of it. Now see whether you have the genius to display originality and spirit in attempting to translate nature's surfaces into line work. You alone are responsible for everything that you do!

This is just what true genius longs for. For perfect responsibility and perfect freedom go hand in hand.

The instruments with which the etcher operates seem so simple and capable of but little variation. Yet, to see what variety is possible, how each individuality can attain its perfect revelation, we need only think of a few different masters of the art. Rembrandt van Rijn, in his sketches and many of his larger plates, asserted the *rights* of line, as it were, and made it the first bearer of true artistic personality. With the addition of dry point he made it produce a new conception, create a new point of view from which the world had as yet not been looked at, and which intensified and focussed problems of light and shade as in a burning-glass. How different are the ends to which Whistler puts line! How entirely novel is his style, how expressive the bit of line with which he

Digitized by Google

operates, how pre-eminently suggestive! The line of another master is again something quite different. It expresses grandeur and earnestness; it means power and energy. If ever there were a display of utter absence of pettiness, it is here. If ever anyone has managed to produce variety of tone, from the highest down to the lowest in the gamut, without ever destroying the value and independence of line, it is he.

Let me sum up my advice again in a few injunctions to the reader who wants to learn how to enjoy looking at prints.

In the first place, look again for the *man* in the print, not for the object depicted. Why do so many people pass over black-and-white art without taking notice of it? Why does it weary them? Because they look for stories, and must confess that words can tell them better. Or they look for nature, and must admit that nature itself is superior to any copies of itself; but that even the painter's copy is a far better one than the black-and-white artist's can ever be.

Do not attach such excessive importance to correctness of drawing in black-and-white art. Correct drawing is a welcome virtue in all branches of art, but it is not the essence of art, especially not of black-and-white art, in which verisimilitude cannot be attained. Some of the most magnificent work of Rembrandt, of Goya, is out of drawing and yet it is fine. For correctness of drawing depends only on the training of hand and eye, and they can be trained. But genius cannot be acquired, and it is genius which enables an artist to translate nature's surface into some splendid system of lines. That is the manifestation of his creative power, and that is the real soul of his art. The ability to draw correctly is, at bottom, a

Digitized by Google

poor thing alongside of this, though I should never wish to decry it in itself.

Do not let a shadow of verisimilitude inveigle you into believing that you like a thing, whereas every renewed look will betray how unsatisfactory and imperfect this verisimilitude really is, and will consequently draw the support of your admiration away from under you.

The powerful, open line-work in prints is what is good and of lasting value. Delicate modelling, over-finish, are ill-judged and savour of the mercantile picture copier. One should not attempt to vie with nature without the help of colour, which alone makes nature natural. The less detail, the less elaborated, the more suggestive a print is, the finer it will be. For we have seen that the soul of the art is to stimulate our fancy. If the mystery of unfinish attaches itself to the work, our fancy will be roused to activity, whereas the artist who tries to say everything himself will not arouse our imagination.

So look at black-and-white pictures not as you do at oil-paintings, or at nature, but from a new point of view adjusted to the character of the art. Only in this way will you do justice to the art, and only by thus entering into its spirit will you be able to extract the wealth of artistic pleasure that it is able to afford you.

Digitized by Google

CHAPTER XV

MODERN PHOTO-MECHANICAL PROCESSES

THE processes that have been described in the foregoing pages are artistic processes, that is, they are such as original artists at different times have invented or employed, when they wished to realise a conception through a medium that renders the existence of many identical copies possible. They always handled the tools themselves, and when alterations or improvements occurred, these were the result of some artist's desire to gain a new vehicle, a new medium, that should convey the creation of his fancy.

Our task, then, the discussion of printed pictures as far as they are a form of high art, is completed.

But as far as the illustration of books is concerned, the black-and-white work of art is fast being replaced by the mechanical black-and-white picture. The books that appear nowadays with etchings, engravings, or lithographs in them, are very few in number. Even woodcuts, the one kind of art prints which depend upon the simplest and quickest process, are rapidly losing ground. The nineteenth century, which has sought to replace all manual labour, or at least reduce it as far as possible, has not hesitated to enter upon the field of black-and-white art.

Attempts to substitute natural agencies for the artist's

Digitized by Google

hand, or at least to cheapen the product by making the labour easier and quicker, appear very early in the history of black-and-white art.

The number of substitute processes is legion. There is no end of inventors. Many have invented the same thing, but have called it by different names; others have invented different processes, and given them one and the same name. Some have endowed their inventions with the most absurd, high-sounding titles. A complete catalogue and description of all these processes would make up a good-sized book.

Probably the earliest among them resort to the aid of chemistry. In a way, etching may be considered the father of them all, for it is the first to substitute a natural agency for the work of man's hand. But we do not class etching with these substitute processes, for, as we saw, it cannot do without the artist, and, in fact, requires really more of an artist than any other process. When, however, etching is used to produce a relief block, merely to do away with the labour of the woodcutter, then it is a substitute process. Other chemical substitute processes depend upon the properties of gelatine, etc.

A second kind of substitute process employs the help of electricity. Thus, for example, if a copper plate be covered with a coating of wax or of pipeclay, and a design be cut through the coating laying bare the copper, the lines of this design can be built up by depositing copper on them in the electrotyper's bath. By this means a relief block can be quickly made, since the wax or clay coating is worked upon easily, whereas the wood of a relief block offers a great deal of resistance to the woodcutter, and renders his task a slow one. Galvanography, invented in 1839 by F. von Kobell, belongs to

Digitized by Google

this class, and consists of painting with certain pigments upon a copper plate, laying the colour on thin where the high lights are, and thick in the shadows. The surface is then made into a conductor, and copper deposited upon it, which results in the production of an intaglio plate, that may be printed like an aquatint. Galvanography is one of the several prototypes of Herkomer's spongotypes, which, too, belong to this class of substitute processes.

A third class, again, relies upon the ingenuity of the mechanic. The medal-engraving machine of Collas furnishes an example. It is constructed in such a manner that, while you pass the point at one end over the relief of the medal, a second point at the other end traces lines on a plate which grow heavy or light as the first point is lowered or raised. The many different kinds of ruling machines belong to this class of substitute processes.

There are numerous others, but all of them have been quite superseded and distanced by the substitute processes that depend upon photography.

Some few publishing houses which have a reputation to sustain, gained by a long list of publications which prove them to have been furtherers of the artist for a hundred years or more, still make a point of illustrating only by means of woodcuts. Occasionally an édition-de-luxe, or some extraordinary album, will appear which contains etchings or engravings. With these exceptions, however, the art of black and white has been relegated to the production of single sheets, and to-day the business of illustrating books is monopolised by the mechanical photo-engraver. At least four-fifths of the pictures that appeared in books and magazines in the year 1896, throughout the Western World, are photo-mechanical productions.

Digitized by Google

Counting the direct photographic processes along with those in which multiplication is effected by means of a printing press, some hundred and odd such methods of producing pictures may be enumerated. Only the kinds that employ a press interest us in this place, and all of these are reducible to three general types, the three types with which we have already become acquainted under the titles of relief prints, intaglio prints, and planographic prints. In other words, the photo-engraver strives to produce what is generically called a woodcut, an engraving on copper, or a lithograph, and in each case employs the sun's rays as a substitute for the missing draughtsman's hand.

Of course, it will be impossible to describe all the methods, some of which differ only in the chemicals used, or in other trifling matters. I will only describe the commonest kind of each type, commonest at once in being the simplest, and in being the kind most usually employed. These are—

Zincography—to correspond with black-line woodcut.

Half-tone process (called autotyping in some countries)—to correspond with white-line woodcut.

Heliogravure (or heliography)—to correspond with engraving on copper in lines.

Photogravure—to correspond with engraving on copper in tones or surfaces.

Phototyping (or collotyping)—to correspond with lithography.

These five names have been selected out of a greater number, since, unfortunately, different countries and different firms in one country call the same process by various names. As has been already stated, the nomenclature with regard to these industries is sadly

Digitized by Google

mixed, and any one using such a name at the present day is still compelled to explain what he means.

The photographic system that lies at the basis of all photo-mechanical methods is the so-called wet or collodion process. All the amateur photographers and nearly all the portrait photographers nowadays use dry plates, since they require much less time of exposure. They are developed in the dark room under a very weak red light. But the result is not nearly as sharp and distinct, not as strong as that to be obtained by the collodion process. In this method the glass plate is covered with a coating of iodised collodion, which is sensitised in the nitrate of silver bath just before using. The exposure may last for half an hour or more, if it happen to be a cloudy day, and the negative is developed by a solution of iron under a yellow light in the dark room. The plate, before it is fixed, is not nearly so sensitive to actinic light as a dry plate is.

Zincography, like woodcutting, derives its designation from the material used, and it is inaccurate in precisely the same way, since zinc is only the most usual, not by any means the only material employed ; copper, and sometimes stone, being used as substitutes.

Zincography can reproduce only drawings in clear and distinct lines, not paintings, water colours, nature photographs, or any sort of designs in tone. Of course a line may be distended so as to appear a space, or reduced so as to appear a dot, but in principle it must remain a line of solid, ungradated black. Good work is ensured if the design to be reproduced has been executed on perfectly white paper with absolutely black ink. As is well known, photography does not reproduce colours in

Digitized by Google

their true values ; a blueish ink will come out paler in a photograph than it ought, a cream-coloured or yellowish paper will come out darker. The zincographer, however, can do nothing with such a gradated negative, for when he prints upon zinc the glass lines must be absolutely clear, and the rest absolutely opaque.

The first thing the zincographer does, then, is to obtain a careful and strong glass plate negative of the design. He thereupon takes a sheet of zinc of sufficient size, coats it with albumen and sensitises it with bichromate of potassium (or ammonium). On this the negative is placed, and the whole set out to print in the ordinary way in which photographs are copied. When the sun has done its work, the zinc positive is taken into the dark room and rolled up with printing ink under a yellow light. Then it is soaked in a dish with water in daylight, and dabbed with cotton wool, which removes the ink and the albumen except where the light has fixed the drawing. This ink drawing is dusted with asphalt, which is melted into the lines of the ink, and when dry combines with it to form a resisting 'ground.'

Next, the back and edges of the plate are covered with a protecting varnish, and it is laid in the acid bath. The mordant eats away the zinc except where the lines of the drawing protect it. These are consequently left standing in relief. We have therefore produced nothing but a woodcut, done without the trouble of transferring the design upon the block by hand—photography does that —and without the trouble of cutting the superfluous wood away—the acid does that.

Whenever, as is usually the case, large white spaces occur in the design, the corresponding portions of the zinc plate are not etched away, as that would take up too

Digitized by Google

much time. An instrument, called a routing machine, resembling in a general way the instrument with which dentists bore holes, does this work more rapidly. When the zinc plate is finished it is nailed at the edges on to a block of wood so thick that both together reach exactly the level of common letter-type. The zinc block can consequently be set between the type and be printed along with it.

An enormous number of illustrations in daily newspapers, periodicals and books are produced in this way. Not the slightest care need be taken of the zinc blocks in the printing, as the open work will not blot, and even when set in lightning steam-presses they need no cleaning. If large editions are to be printed, a number of electrotypes are made from the block, and a new one replaces the old one as soon as it shows wear.

Zincography is the cheapest form of picture-printing in existence—and that to its own disadvantage. For being so cheap, people have come to the point when they want to pay hardly anything at all for zinc blocks. Consequently, the producer, if he does not want to lose money on them, must hurry them off rapidly, and not one perhaps in five thousand is what it should be. A zinc block could, and should, be an absolute *facsimile* of the original pen-and-ink drawing. But that requires a faultless negative, and it also requires careful and slow etching. Instead of that, the very first negative is taken, whether it has turned out good or bad, and the etching progresses without any stopping out, without any attention being paid to biting the lines to their proper thickness. If they are only approximately correct, and none of the principal ones have gone foul, the block is generally sent

Digitized by Google

to the printer. Wretched printer's ink and careless printing on poor paper do the rest.

With a large class of publishers, however, the vital point is cheapness, and so the usual zinc block serves their purpose, as it enables them to offer at least line-pictures in black and white at a reasonable price. The next thing to do was to invent some cheap method of reproducing oil-paintings, or photographs after nature. These show gradations of tone, but no lines. This would correspond to the modern white-line woodcut, and is achieved by the half-tone block. The name implies that it can reproduce half and gradated tones.

Two things were necessary. The original painting or photograph had to be transformed in some way into a relief block, for only such a block can be printed along with type, that is in the cheap and fast press. Furthermore, this transforming or breaking up into a relief had to be extremely delicate, or the half-tones would not be preserved.

All the experiments to attain these ends have culminated in the use of the 'screen.'

To make a 'screen' a perfect plate of glass, without any flaw in its body or unequality on its surface, is covered with a thin and absolutely homogeneous film of opaque 'ground,' something like etching ground, but rendered opaque by being mixed with graphite. Then, by means of a diamond in an automatically governed ruling machine, lines are drawn diagonally across the plate in one direction, just removing the 'ground.' The ruling machine enables the workman to place all his lines at exactly the same distance from one another. The slightest inequality would ruin the screen. The finest screens have two hundred lines to the inch. The

Digitized by Google

plate is then etched with fluoric acid, the ground removed and the bitten lines are niellated and polished. When one such plate is finished an exactly similar second one must be made. These two are then joined face to face with Canada balsam, having been placed so that the diagonal niellated lines cross. Then the screen is ready for use. Making such a screen is a slow and tedious task. If it be only ten inches square and the workman draw only a hundred and twenty lines to the inch, he would still have to draw over two thousand in all. Should he slip on any one of the last hundred, his whole work would have been done in vain, or at least his screen would not be perfect.

Sometimes both sets of diagonals are drawn on one and the same plate, and screens have been multiplied by photography. Both practices have been abandoned, however, of late.

Light can pass only through the innumerable minute white squares of such a screen, as through the meshes of a net. It is placed a quarter of an inch, or less, before the negative in the camera, and the painting or object of nature is photographed into the negative through the screen. Consequently, the negative is broken up into a great number of minute squares, which are stronger or weaker as the corresponding portions of the original object were lighter or darker.

When a good screen negative has been obtained, the photo-engraver takes a copper plate of sufficient size—zinc is also used, but for the high-class fine-screen work copper is indispensable—coats it with a solution of fish glue, sensitised by bichromate of potash, and exposes it under the negative. As soon as the printing has progressed sufficiently, the copper positive is developed in

Digitized by Google

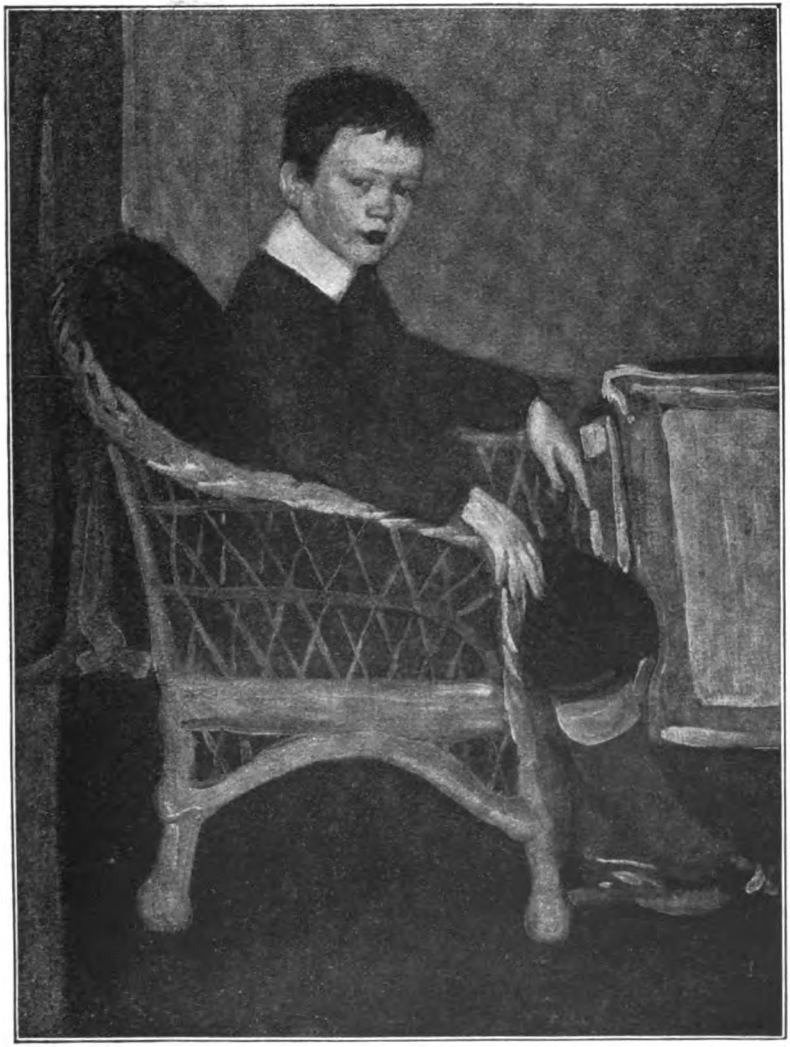
HALF-TONE PROCESS

Digitized by Google

gr

HALF-TONE PROCESS

Digitized by Google



Digitized by Google

Digitized by Google

cold water, which leaves the picture on the copper, but invisible. Then a solution of methyl-violet is poured over the plate; this brings out the picture, as it adheres only to the fish-glue. The plate is then taken hold of with nippers and held over a spirit flame (or it is placed on a gas stove) until the fish-glue is enamelled on to the copper. The violet coloured picture turns a chocolate brown. Wherever the copper has been thus enamelled it cannot be attacked by acid, while the minute little spaces between the enamelled dots will be eaten away when the plate is inserted in the mordant bath. Only a very short time of biting is required. Since the dots are so close together, the spaces eaten away need be only shallow. When you pass your finger over such a plate, the roughness is hardly noticeable.

The copper plate is nailed on to a wooden block, so that it may be printed along with the letter-press just like the zinc blocks.

I should mention that sometimes a 'grain' screen is used instead of the line screen. This consists of closely set dots, in place of the closely ruled lines. It is, however, enormously difficult to construct such a grain screen perfectly even, so that no pattern or inequality should appear anywhere. Generally speaking, the line screens will always be found to prove more satisfactory.

By this invention, the problem of producing a steam-printable block of a photograph after nature or an oil-painting, has been solved; there are, however, some drawbacks to the process.

In the first place, all half-tone blocks are unnaturally lowered in tone, just like and even more than photographs. No absolute white can be produced, as the vestiges of the screen will never vanish completely. This drawback

Digitized by Google

is irremediable except by a *tour de force* called silhouetting. A scroll saw is employed to cut out bodily the portion of the plate which is to appear pure white. But this portion remains a glaring silhouette, and destroys the harmony of the picture. Consequently it cannot be said that much has been gained. A half-tone block could be heightened in tone, and its harmony increased, by elaborate etching and stopping out. As this would not only require much time, but also the taste and skill of a true artist, it goes without saying that it is hardly ever attempted.

A second drawback is remediable, as it is caused only by the over-economy of publishers. Most of the autotypes or half-tone blocks that we see are dirty and spotted in places. This happens because the spaces bitten away are so very shallow; consequently the inking roller of the steam-press is liable to fill one up here and there. To avoid this the block should be taken out between say every hundred printings and carefully cleaned with turpentine. But that makes the printing dearer.

The best publishing houses nowadays employ for fine work some first-class printer. His presses are very powerful, and he prints with an extremely viscid ink on especially prepared 'coated' paper. All these circumstances reduce the danger of spotting a block to a minimum. The paper is very important. While line zinc blocks may be printed on the rough hand-made article, half-tone blocks peremptorily demand the smooth machine-make. The coated paper, already referred to on page 24, which is brilliantly white, is the best.

The printing of half-tone blocks has brought a new feature to the fore, namely, the laying or rather under and over-laying of blocks. This was already practised

Digitized by Google

by some of the woodcut printers in former days. A 'flat' proof of a block as it comes from the photo-engraver generally shows itself to be in need of some touching up: some portions should come out darker than others. To attain this object the printer cuts a piece of paper just the size of such a portion, and pastes it on the back of the block exactly at the corresponding spot. By this means the block is made a shade thicker at this spot, so that the pressure here is a little stronger, and this suffices to make such a portion print heavier. In overlaying the paper is fixed on to the proper place of the cylinder, or merely laid on the top of the block. Blocks can be laid very skilfully in this manner.

Of course, bad printing is not the sole cause of the poorness of so much of the half-tone work that we meet with. The process has nothing to do with the artist, but it has something to do with the mechanic, and it makes a decided difference whether he be good or bad. The process does not work by itself. The trouble lies in the same direction as in the case of zinc blocks. If publishers are not willing to pay good prices, then the chemigrapher cannot afford to make several negatives until he gets a perfect one, or to etch several blocks until he has turned out a satisfactory one. Then he is hurried. Publishers are so glad that there is a process which is so much faster than the woodcut, that they have quite forgotten to have patience. Short delivery, 'Send the office boy, and let him wait,' is the rule nowadays, and of course under such conditions the photographer can never expect to produce good work.

A possibility of supreme interest lies at present still dormant in the half-tone process, three-colour printing. Leblon's theory has been taken up by the autotype chemi-

Digitized by Google

grapher, and he, if any man, can develop it to a true result. For it is beyond the human eye to resolve unerringly a given tone into its component parts of blue, red, and yellow, while this is not beyond the ability of a photographic camera.

Ducos Duhauron in Paris and Cross in London were (in the forties) the first to make attempts with photographic three-colour prints. They made pigment prints of three colours, pasted them upon each other, and thus obtained an approximately correct diapositive. Joseph Albert was the first to try to apply the system to photo-engraving. He first used the filters, and in the course of his experiments he invented phototyping, to which we will recur.

Here is an account of the process as it is done to-day. Three negatives must be taken of the object or painting to be reproduced, one for each colour, and, of course, great care must be taken to move neither the original nor the camera until all is done. These negatives are taken on orthochromatic dry plates. On the yellow, the yellow rays have to be stopped out so that pure glass remains. This stopping out is effected partly by the colour principle inherent in the collodion with which the plate has been treated, partly by placing a blueish-violet filter (that is, piece of glass) before the lens. For the red plate the stopping out is done by treating the plate with cyanine, and by using a green filter. For the blue plate, eosine and a red filter are used.

When these three negatives have been obtained, diapositives (that is, positives on glass) are made from them, and from the diapositives screen negatives are made in the manner that has been described above. For each one of the three-screen negatives, the screen must

Digitized by Google

be slightly tilted (about 30 degrees), or else all the lines of the final three-screen plates would print exactly on top of each other. This tilting is one of the principal difficulties, as there is great danger of a moiré pattern resulting. For when you superpose two screens at right angles, all the angles formed by the crossing of the four sets of lines are equal. But when you have three screens, you can no longer superpose them at right angles, and the angles formed by the six sets of lines vary from the most acute to the most obtuse.

The three-screen negatives are made into printable autotype blocks, and all three printed, each in their proper colour, one on the top of another, exactly registered, like an engraving in colours.

The difficulties of this intricate process have not yet been quite mastered, although the method has been the subject of experiments for a number of years. It has not come to the stage of being practically useful. I have seen fair specimens out of an edition of two thousand, but they were still looked upon as trial plates, and so far no books or newspapers have been illustrated with three-colour autotypes. Strange to say, the chemigraphers do not work with pure approximately prismatic blue, red, and yellow, but vary their tints according as there is more blue, red, or yellow in the painting that they are reproducing. This applies not only to the filters, as we have seen, but especially to the tints of the inks with which the final printing is done.

It will be very interesting to follow the development of this process. Enthusiasts claim that within a few years half of all the illustration in our books and journals will be polychromatic, done on the three-colour system. However, the process will be limited to the reproduction

Digitized by Google

of paintings. Of nature nothing but some still life could be attempted, since, on account of the filters, a long exposure is necessary.

The photo-mechanical processes are in the main mercantile, and so it may be considered fair to look at them from a business standpoint. We will, therefore, change the order in which we treat of them, and let the planographic, not the intaglio, processes follow the relief prints. For line zincography is the cheapest process; half-tone photo-engraving comes next; then follows collotyping, while helio- and photogravure are the most expensive.

The factor that renders collotyping, or phototyping, more expensive than half-tone blocks, is not the manufacture of the plate itself so much as the printing of it. Here, again, it is not only that the phototype press runs slower (a little slower even than the lithographic press), but when there is a phototype on a page, there are always two printings necessary, one for the picture and one for the letter-press, while in the case of half-tone process illustration and letter-press are printed simultaneously, as we have already learned. In consequence of this we seldom find collotype illustrations inserted in the text. They are generally printed upon separate sheets of paper and bound up in the book next to the page of text which they illustrate.

To make a collotype, the chemigrapher takes a plate of glass, between a third and half of an inch in thickness, and coats it with a thin film of gelatine. In order to join film and glass firmly, the plate is first moistened with a glutinous solution containing beer. The gelatine film is then sensitised by a solution containing bichromate of potassium and chromic alum. The latter renders the film more durable, and gives it a minute delicate grain so that it will

Digitized by Google

hold moisture and ink better. This plate is then exposed to diffused light in a copying frame under a reversed negative, and copied like an ordinary photograph. The light has the effect of rendering the gelatine film insoluble in water. As soon as the copying is finished, which can be ascertained by looking at the plate from the back, since the glass is transparent, the plate is immediately fixed by washing. The gelatine that has not been acted upon by light accepts the water, the rest does not in proportion to the amount of light that has fallen upon it, and thus the film possesses the same properties as a Solnhofener stone that has been drawn upon with lithographic ink.

This positive film is printed in the same way as a lithographic stone. It is moistened with glycerine and water (water alone would wear the film too rapidly) for about two hours, and then about 200 prints can be taken in the steam press before a second moistening is necessary.

Collotypes after nature and after oil-paintings are that form of printed pictures which, in appearance, approach most nearly to photographs. While they preserve all the exceedingly delicate transitions of a photograph, they add thereto the important advantage of being absolutely unalterable. The collotype also lowers the tone of the original, but not so much as a half-tone-block or a photograph does, since white paper is printed upon and delicate ink may be used. When a collotype after a plain pen-and-ink drawing is made no lowering of tone takes place at all, and the facsimile may be as perfect as that attained by the most careful zincographer.

The great drawback of collotyping is to be found in the printing process. A most carefully treated film will not stand above 1,500 impressions in the steam press, and

Digitized by Google

a good many less in the hand press. Generally the prints become smudgy, and far from being facsimiles, much earlier. So it happens that the delight with which we hail the first few copies of a good collotype vanishes abruptly when we return upon the following day to the printer's and see some of the prints taken towards the end of the edition. Furthermore, this process is very sensitive to the moisture in the atmosphere. In some climates it is impossible to work it.

Collotyping is employed extensively in the production of auction and gallery catalogues; also to a great extent in producing single sheets after popular paintings, and in this case coloured facsimiles are very often made, with or without the aid of lithography. There are also collotype experiments with the three-colour theory abroad. It has already been noticed that collotyping is sparingly employed for the purpose of ordinary book-illustration.

The intaglio photographic printing processes are the most expensive in their class, just as the artistic intaglio processes are in theirs. In this case both the production of the plate and the printing are more difficult and costly. Steam presses for engraved plates have been invented, but they can only print line work, and that not nearly as fast as the steam lithographic, let alone the steam type press. Very few are in use at all.

Following a widely spread though by no means a general custom, I have chosen the designation heliogravure for the intaglio photo-mechanical processes in line, and photogravure for those in tone.

In making a heliogravure after an engraving (drawing in line, old-style woodcut, etc.), a distinct glass negative is obtained first, and this, reversed, is put into close contact

Digitized by Google

with a chromated gelatine film that has been spread on a glass plate. The light passing through the negative, wherever there has been a line in the original, chemically changes the gelatine and makes it insoluble in water. After the copying is finished the film is washed with hot water, which removes all the portions that have not been acted upon by the light, that is, all the white portions of the original. The result then is a facsimile of the original engraving in hardened gelatine film upon the glass plate. The whole plate is now transformed into a conductor by being dusted with graphite and put into the electrotyper's bath, where copper is deposited upon it. In order to make the copper attain the thickness of an ordinary copper plate about twenty days' time is necessary. When the plate is taken up, it will be found to show little furrows in its surface, wherever there were lines of hardened gelatine, which in their turn correspond to the lines of the original engraving or drawing. A plate with such furrows is printable in the same way as a line engraving.

Heliogravures can also be made with the help of etching in place of electrotyping. In this case a diapositive, that is, a positive on glass, is used in place of the negative. The gelatine film is first spread upon paper and allowed to dry three days. Thereupon it is sensitised and copied under the diapositive. Then it is squeegeed on to the copper, moistened, the paper stripped off, and washed with hot water which takes off the soluble gelatine. This time, of course, the lines have remained soluble and are washed out; the rest of the gelatine is further hardened with alcohol and forms an etching ground which perfectly resists the chloride of iron with which the plate is now bitten.

Digitized by Google

The former method should be the truer, for the gelatine facsimile should always correspond exactly to the object photographed, while in the latter process there is the possibility of under- or over-biting.

As a matter of fact, theory leaves practice somewhat behind it in both cases, and every heliogravure of any value has been touched up afterwards by professional engravers or etchers. They go over lines that are too weak, or burnish down others that have come out too heavy. If they have the original at hand as a guide, and are skilful, they can produce excellent facsimiles, such as those made at Berlin by the Reichsdruckerei. In most cases they have only the photographic negative or diapositive to guide them, and very often they are expected to do their retouching without any help at all, just on general principles. This accounts for the failings of many a heliogravure, and the evil is in most cases unavoidable. Such reproductions, in themselves expensive, are generally made after very precious originals, drawings and prints, the owners of which can hardly be prevailed upon to lend them out of the house for the time necessary to photograph them. The establishment of the photo-engraver is certainly a dangerous place in which to trust things of value. The chemicals stain; the hands of the workmen are seldom clean; there is always dirt flying about, and in addition to this hardly anybody knows how to handle a valuable print or drawing properly. So it happens that the owner secures his original as soon as ever he can, and does not think of leaving it at the establishment the several days that it takes before the matter of retouching a plate comes to be considered.

A big state institute like the Reichsdruckerei at Berlin presents decided advantages over the ordinary

Digitized by Google

trade establishments. As money is no object here—the Government granting a liberal support—all the necessary precautions may be taken to ensure the perfect safety of originals, and a high standard in the production of plates. The facsimiles of rare prints and drawings made at this institute are so excellent that even collectors have been deceived into believing them to be originals. Consequently, after the first few had been made, all the reproductions of this press have been designated as such by means of a stamp on the reverse.

In the outline of the heliogravure processes I have not taken notice of a good deal of detail, perplexing and difficult to the workman, but not necessary for the information of the general reader, who wishes only to gather an idea of the principles of these processes. Photogravuring exhibits still more complications and detail. But I will again limit the account to a general outline, sufficiently explaining its main principles.

For the purpose of making a photogravure a pigment print must first be produced. A thin film of gelatine is mixed up with some pigment, generally carbon, and spread upon paper. After it has become dry it is sensitised with bichromate of potash, and then exposed to the light under a reversed diapositive of the original. The light renders the gelatine insoluble. Where the diapositive allows it to pass freely, it will gradually work through the whole film and harden all the gelatine. Where the diapositive retards the light somewhat, the gelatine will have been hardened only to some depth in the film. Wherever the diapositive allows no light to pass, the film will remain soluble throughout its whole thickness. Thus a perfect miniature relief of hardened gelatine is formed, the uneven surface however being below and separated by

Digitized by Google

some of the gelatine still left soluble from the paper. The smooth back of this relief is then soaked in water and carefully pressed upon the copper plate. Now the sheet of paper and the soluble gelatine may be washed off: this will leave the gelatine relief, bare and face upwards, firmly fixed on to the copper plate. Finally, the relief is hardened still more.

This gelatine relief is used in the same manner as an etching 'ground.' But as it is not quite porous enough, and as its thin places would allow the mordant to attack the copper without giving it a real printable grain, a dust-box aquatint ground is first laid on to the copper plate, and the pigment print then pressed upon it. When etching such a photogravure some mordant that does not cause ebullition must be used, otherwise the bubbles would lift up the film. The mordant, chloride of iron, is generally used in three different strengths. The thick solution, which bites only in the shades where it has a thin film of gelatine to pass through, is applied first: the thinner, weaker ones in their turn.

This process is a very precarious one, and I repeat that although the man who engages in it need not be in any degree an artist, he must certainly be a very competent chemigrapher. Even such a workman will not be able to produce a perfectly satisfactory plate every time, and nine-tenths of all the photogravure plates must, after the chemigrapher has finished with them, be retouched by means of the roulette and the burnisher.

There are many variations of this process, and there are other photogravure processes, among which there is one that I will mention as especially interesting because of its extreme simplicity. It is no more than a reversal of the half-tone relief process. Instead of copying the

Digitized by Google

picture on the prepared copper through a negative, it is copied through a diapositive. Consequently all the shades of the original will be etched into the copper, while the lights are left standing, and this makes the plate an intaglio one. This process is more direct and quicker than the above; it also necessitates less retouching. It has, however, the one drawback that the lines of the screen will always remain visible, and even the closest lined screen in use at present does not equal the surface effect of a dust-box aquatint and gelatine film-ground.

Before leaving the subject of technics, I will only mention that there are other substances besides gelatine, upon whose chemical properties the photo-engraver depends. Such are, for example, albumen and asphalt; but upon the whole gelatine is most frequently used.

Photogravuring occupies the place of honour among the photo-mechanical processes, just as line engraving or etching does among the graphic arts. It has gone far towards dethroning reproductive line engraving, and we find it most commonly employed in copying popular paintings, old and new, in a large size, which some twenty or thirty years ago would have been entrusted to the copying line engraver. In spite of being somewhat dear, they are of course not half so expensive as the line engravings. Taken artistically, I should not consider them much more of a success, but of course they are truer to the original than the work of the average reproductive engraver. The fact that they are done by means of a surface method no doubt makes them so popular with the public at large, who will rejoice in the possession of a few photogravures, hung in gaudy frames upon their walls, and never consider that the same amount of money would have secured some original etching, engraving or

Digitized by Google

woodcut, perhaps more modest in its dimensions, but a work of art. Photogravures are often printed in colours (according to the one-printing system, the colours being painted on to the plate, and the print extensively retouched by hand-painting), and then the felicity of the public reaches a climax.

Let them rejoice if they will, but they should not flatter themselves to the extent of believing that they possess artistic inclinations. To call a photo-mechanical picture producer a fine art publisher is applying a misnomer. Art of any kind is creation, and photography of any kind is description. The writer of a gallery catalogue describes a painting verbally, the photographer does it pictorially; neither of them is an artist. In fact, the catalogue writer is even the nearer the artist of the two, for he at least performs an act of mental creation in the putting together of words. The photographer's business is merely to remove or reduce all obstructions in the way of the process, nothing more.

Anybody who claims that a photograph or a photogravure gives him any artistic pleasure, is his own dupe. It may help to recall the pleasure that he experienced once upon a time in face of the original painting, and thus cause him to rehearse it mentally, but that is all. By virtue of our powers of association it may even enable him to experience such a mental pleasure if the photograph be after a picture which he has never seen in the original. But the photograph itself is only a cue to enjoyment, not a source of it. It ranks in this respect with the type of a common penny paper, that happens to reprint a fine poem.

As soon as the public will be persuaded to eschew the pretentious photogravures and befriend itself with true

Digitized by Google

graphic art, even if it be only the simple, original woodcut, we may hail an improvement of taste. For all photo-mechanical processes should be banished from our walls or portfolios, where they strut with borrowed feathers, and relegated to that province where they belong—the purpose of study and the illustration of books.

Digitized by Google

CHAPTER XVI

BIBLIOGRAPHY

FOR readers who may wish to gain more special information on any one point, I have subjoined a list of books that treat of artistic and mechanical processes. All of these books, with the exception of half a dozen perhaps, are addressed to the practical workman or artist.

The list is arranged chronologically, and will give an idea of the growth of this branch of literature. The ascendency of photomechanical literature towards the end of our century, however, is not sufficiently apparent, for more than half of all the information and instruction pertaining to this subject has been published in specialist journals and not in book form. Such articles could not be included in our list, except in case they were afterwards published as separately printed pamphlets.

Besides omitting mention of all articles that have appeared in any periodical whatsoever, the list also passes by unnoticed a number of books, mostly histories of the art of engraving, in which technical matters are barely touched, the explanations being of the most jejune sort. Finally, articles in encyclopedias have also not been included.

The bibliography is virtually limited to English, French, and German books. Of course I do not flatter

Digitized by Google

myself to the extent of believing that the list is complete, yet I hope that only few of the older books of real importance will be found missing.[1]

1583

M., L. A profitable Boke, declaring dyuuers approoued remedies to take out spottes and staines . . . . ; how to gylde, to graue, sowder and vernishe, and to harden and make soft yron and steele . . . . Taken out of Dutch, and Englished by L. M. *London* (*T. Purfoote & W. Pounsonbie*): 4to. [1

1588

M., L. A profitable Boke . . . . with the art of limning. (2nd edit.) *London:* 4to. [2

1596

M., L. A profitable Boke . . . . with the art of limning. (3rd edit.). *London:* 4to. [3

P., W. A Book of Secrets: shewing diuers waies to make and prepare all sortes of Inke and colours . . . . . ; and to graue with strong water in steele and iron. Translated out of Dutch by W. P. *London* (*A. Islip*): 4to. [4

1605

M., L. A profitable Boke, *etc.* *London* (*T. Purfoote*): 4to. [5

1634

BATE, JOHN. The Mysteries of Nature and Art, contained in foure severall tretises, the first of waterworkes, the second of fyer workes, the third of drawing, colouring, painting and engraving, *etc.* *London:* 4to. [6

[1] This bibliography cannot lay claim to scientific accuracy, as it is for the greater part based, not on the handling of the books themselves, but on printed notices of them. Perhaps it will some day be found satisfactory as a foundation upon which somebody may construct a true bibliography. Starting with Duplessis' Essai, Wessely's and Goebel's Bibliographies, and the Weigel Catalogues, I have expanded their lists by consulting Watt's *Bibliotheca Britannica*, Bohn's *Lowndes' Manual*, Allibone's *Dictionary of English Literature and Dictionary of British and American Authors*, Low's *Catalogue of Books*, the Kensington *Reference Catalogue of Books on Art*, Quérard's *La Littérature française contemporaine*, Lorentz' *Catalogue général de la Librairie française*, Heinsius' *Bücher Lexikon*, Hinrichs' *Büchercatalog*, and divers sales catalogues. My thanks are due to Mr. Campbell Dodgson and Mr. Lawrence Binyon for supplying me with several titles and dates of editions, and likewise to Mr. S. R. Koehler, of Boston, U.S.A., whose kind assistance was modified only by the circumstance that I called upon it on exceedingly short notice.

Digitized by Google

1635

BATE, JOHN. Mysteries of Nature and Art. (2nd edit.) *London:* 4to. [7

1638

BATE, JOHN. Mysteries of Nature and Art. (3rd edit.) *London:* 4to. [8

1645

BOSSE, ABRAHAM. Traité des manières de graver en Taille douce sur l'airain, par le moyen des eaues fortes et des vernix durs et mols: ensemble de la façon d'en imprimer les planches et d'en construire la presse, *etc.* *Paris:* 8vo. Illustrated. [9

C. 1645

ARGUES, GERARD DES. Maniére de graver en taille-douce, et á l'eau forte. *Paris:* n.d. 8vo. [10

1649

BOSSE, ABRAHAM. Sentimens sur la distinction des diverses manières de peinture, dessein et graveure, et des originaux, d'avec leurs copies, *etc.* *Paris:* 8vo. [11

1652

BÖCKLER, GEORG ANDREAS. Kunstbüchlein handelt von der Radier- und Etzkunst . . . . durch Abraham Bosse, ins Teutsche befördert durch . . . . *Nürnberg:* 8vo. [12

1654

BATE, JOHN. Mysteries of Nature and Art. Third [4th] Edition, with many additions. *London:* 4to. [13

1662

FAITHORNE, WILLIAM. The art of graveing, and etching, wherein is exprest the true way of graveing in copper, allso the manner and method of that famous Callot and M. Bosse, in their severall ways of etching. *London:* 8vo. [14

(BOSSE, A.) Traité, *etc.* *Translated into Dutch.* *Amsterdam:* 12mo. [15

1669

BÖCKLER, GEORG ANDREAS. Radier-Büchlein, Handelt von der Etzkunst . . . Erstmals durch Abraham Bosse . . . in Französischer Sprache beschrieben, Anjetzo aber Zum Andernmal . . . in Teutscher Sprach herauss gegeben und vemehrt. Sampt einer Zugabe von der Herold-Mahl- und Reiss-kunst, mit dazugehörigen Figuren, durch Georg: Andream Böckler. *Nürnberg:* 12mo. [16

Digitized by Google

1670

SALMON, WILLIAM. Polygraphice, or the Arts of Drawing, Engraving, Etching, Limning, Painting, Colouring . . . *London:* 8vo. [17

1672

SALMON, WILLIAM. Polygraphice, or the Arts of Drawing, Engraving, Etching, Limning, Painting, Colouring, *etc. etc.* (2nd edit.) *London:* 8vo. Illustrated. [18

1673

BÖCKLER, GEORG ANDREAS. Abraham Bosse's grundliche Anweisung zur Radier- und Etz-Kunst. (3rd edit.?) *Nürnberg:* 8vo. [19

SALMON, WILLIAM. Polygraphice. (3rd edit.) *London:* 8vo. [20

1675

BROWNE, ALEXANDER. Ars Pictoria: or an Academy treating of Drawing, Painting, Limning, Etching. To which are added 31 copper plates, with Appendix on Miniature Painting. *London:* fol. [21

——— *The same.* (2nd edit.) *London:* fol. [22

SALMON, WILLIAM. Polygraphice. (4th edit.) *London:* 8vo. [23

1685

SALMON, WILLIAM. Polygraphice, *etc.* The 5th edition, enlarged and adorned with 25 copper Sculptures (by W. Sherwin). *London:* 8vo. [24

1685–1700

SALMON, WILLIAM. Polygraphice, *etc.* [Four? intermediate editions.] [25–28

1701

BOSSE, ABRAHAM. Traité, *etc.* (Second edition, in French.) *Paris.* [29

SALMON, WILLIAM. Polygraphice, *etc.* (Tenth edition, 2 vols.) *London:* 8vo. (Some catalogues call this the 8th ed.) [30

1722

LE BLON, J. CHR. Nouveau genre de Peinture, ou l'art, d'imprimer des portraits et des tableaux en huile, avec la même exactitude que s'ils étoient faits au pinceau. *Lonaon:* 4to. [31

——— Coloritto; or the Harmony of Colouring in Painting: Reduced to mechanical Practice, under Easy Precepts and Infallible Rules. s.l. & a. 4to. [32

1730

LE BLON, J. C. Il Coloritto; ou l'harmonie du coloris dans la peinture, réduite à des principes infaillibles, et à une prâtique mécanique, avec des figures imprimées en couleur, pour en faciliter l'intelligence. s.l. 4to. [33

Digitized by Google

1732

HAUCKWITZ, J. An essay on engraving and copper-plate printing, to which is added Albumazar, or the Professors of the Black art, a Vision [in verse]. *London:* 4to. [34

1737

LE BLON, J. C. Coloritto; or the Harmony of Colouring . . . *London:* [With 5 specimens.] [35

1740

FUNCK, J. M. Kurze, doch nützliche Anleitung von Form und Stahlschneiden . . . *Erfurt:* 8vo. [Illustrated.] [36

1745

BOSSE, ABRAHAM. Traité, *etc.* [New edition by C. N. Cochin, jun.] *Paris:* 8vo. [37

ANON. Manière de graver à l'eau forte et au burin. *Paris (?):* [38

BÖCKLER, G. A. [Adaptation of Bosse's 'Traité' into German, by G. A. Böckler. 4th edit. (?)]. *Nürnberg:* 8vo. [39

1747

ANON. Sculptura-Historico-technica: Or the history and art of Ingraving. Containing I. . . . II. . . . III. . . . IV. . . . V. . . . of Ingraving, Etching, and Scraping on Copper, as now practised, with Cuts to illustrate it. Extracted from Baldinucci, Florent le Comte, Faithorne, the Abecedario Pittorico, and other Authors. *London:* 12mo. (2nd edit. The first appears to have come out the same year. According to the Brit. Mus. Catalogue it forms a second edit. of 'Repertorium sculptile-typicum.') [40

1749–50

GAUTIER, J. Lettres concernant le nouvel Art de graver et d'imprimer les tableaux. *Paris:* 12mo. [Illustrations.] [41

1754

FUNCK, J. M. Kurze, doch nützliche Anleitung, *etc.* [Second edition.] *Erfurt:* 8vo. [Illustrations.] [42

JACKSON, J. B. An Essay on the Invention of Engraving and Printing in Chiaro Oscuro, as practised by Albert Durer, Hugo di Carpi, etc., and the application of it to Making Paper Hangings of Taste, Duration, and Elegance, by J. B. Jackson, of Battersea. Illustrated with Prints in proper Colours. *London:* 4to. [43

1756

[GAUTIER DE MONTDORGE.] L'Art d'imprimer les tableaux. Traité D'apres les Écrits, les Opérations & les Instructions verbales, De J. C. Le Blon. *Fr. and Eng. Paris:* 8vo. [Illustrations.] [44

Digitized by Google

GAUTIER, J. Lettre à l'auteur du Mercure sur l'invention et l'utilité de l'art d'imprimer les tableaux. *Paris:* 12mo. [Dated 13 March, 1756. A second 'letter' followed in the same year.] [45

1758

BOSSE, ABRAHAM. De la manière de graver à l'eau forte et au burin, et de la gravure en manière noire. Par Abraham Bosse. Nouvelle edition, augmentée de l'impression qui imite les tableaux, de la Gravure en manière de crayon et de celle qui imite le lavis. Enrichie de vignettes et 21 planches en taille douce. *Paris:* 8vo. [46

DOSSIE, ROBERT. The Handmaid to the Arts. (Of the substance used in Painting, of engraving, etc. etc.) The whole being calculated, ... to initiate those who are desirous to attempt these arts, *etc.* *London:* 8vo. [47

ANON. Sculptura-Historico-technica. [Third edition.] s.a. sed c. 1758. [48

1760

FRANÇOIS, CHARLES. Lettre à Mr. Saverien sur l'utilité du dessin et de la gravure dans le goût du crayon. *Paris:* 12mo. [49

1761

BÖCKLER, G. A. [Adaptation of Bosse's 'Traité' into German, by G. A. Böckler. 5th edit. (?).] *Nürnberg:* 8vo. [50

RUEDA, MANUEL DE. Instruccion para gravar en Cobre, y perfeccionarse en el gravado a buril, al agua fuerta, y al humo, con el nuovo metodo de gravar las planchas en colores. . . . *Madrid:* 12mo. [51

1764

DOSSIE, ROBERT. The Handmaid to the Arts. (Of the substance used in Painting, of engraving, etc. etc.) . . . The 2nd edition, with considerable additions and improvements. *London:* 8vo. [52

PERNETY, ANTON JOSEPH. Handlexikon der bildenden Künste, worin alles, was beim Zeichnen, Malen, Bildhauen, Kupferstechen, Stein-, Metall- und Formschneiden, Aetzen und Giessen üblich ist, erklärt wird, *etc.*, aus dem Französischen. *Berlin:* 8vo. [53

1765

NITZSCHE, C. TH. Die Kunst in Kupfer zu stechen. . . . . A translation of the 2nd edit. of Bosse's 'Traité.' *Dresden.* [54

1766

PAPILLON, J. M. Traité historique et pratique de la gravure en bois. Par J. M. Papillon, ... Ouvrage enrichi des plus jolis morceaux de sa composition & de sa gravure. Tome Premier: contenant toute la partie Historique. Tome Second Contenant tous les principes de cet Art. *Paris:* 8vo. [Illustrated.] [55

Digitized by Google

1768

[GAUTHIER DE MONT D'ORGE.] L'art d'imprimer les Tableaux. Traité d'après les écrits, les opérations et les instructions verbales de J. C. Le Blon. *Fr. and Eng. Paris:* 8vo. [Three plates, one in colours.] [56

1769

BONNET, LOUIS. Le Pastel en gravure inventé et exécuté p. Louis Bonnet, composé de huit épreuves qui indiquent les différens degrés. *Paris:* 8vo. [57

1770

ANON. Sculptura-Historico-technica . . . To which is now added a chronological and historical series of the painters from the eleventh century. With copper-plates. The fourth edition. *London:* 12mo. [58

1771

LUCE, LOUIS RENÉ. Essai d'une nouvelle typographie ornée de vignettes, fleurons, trophées, cadres et cartels. *Paris:* 4to. [59

1772

BYLAERT, JO. JAC. Nieuwe Manier om Plaet-Tekeningen in 't Koper te bringen, van een, twee of meer Couleuren . . . Aengetoond en uitgevoerd door J. J. Bylaert.—Nouvelle manière de graver en cuivre . . . Traduit du hollandois par L. G. F. Kerroux. *Dutch and Fr. Leiden:* 8vo. [60, 61.

1773

BYLAERT, J. J. Neue Manier, Kupferstiche von verschiedenen Farben zu verfertigen nach Art der Zeichnungen von Johann Jakob Bylaert, Maler und Kupferstecher in Leyden, erklärt und ausgeführt. Aus dem Französischen und Holländischen übersetzt. *Amsterdam and Leipzig:* 12mo. [62

STAPART. L'art de graver au pinceau, nouvelle méthode plus prompte qu'aucune de celles qui sont en usage, qu'on peut exécuter facilement, sans avoir l'habitude du burin ni de la pointe, mise en jour p. Mr. Stapart. *Paris:* 12mo. [63

1780

LEPRINCE, J. B. Découverte d'un procédé de gravure en lavis, par M. Leprince. *Paris:* 4to. [A prospectus.] [64

STAPART. Die Kunst mit dem Pinsel in Kupfer zu stechen. Neue Methode, die viel geschwinder, als alle bisher übliche geht, und leicht ausgeführt werden kann, wenn man auch gleich mit dem Grabstichel oder der Radiernadel nicht umzugehen wüsste. Aus dem Französischen des Herrn Stapart übersetzt von M. J. C. Harrepeter. *Nürnberg:* 12mo. [65

Digitized by Google

1790

TISCHBEIN, JOHANN HEINRICH. Kurzegefasste Abhandlung über die Aezkunst und die geäzten 84 Blätter, welche durch Johann Heinrich Tischbein, Inspektor der fürstlichen Bildergallerie zu Cassel, herausgegeben sind. Zur Belehrung für angehende Künstler und Liebhaber. *Cassel:* folio. [66

BOOTH, J. A catalogue of Pictures, copied for Sale by a Chymical and Mechanical process, the Invention of Mr. Joseph Booth; Exhibited . . . by the Polygraphic Society . . . Being their Fifth Exhibition: opened in November, 1790. To which is prefixed a Short Address relative to the Nature and Utility of this new invention. *London:* 4to. [67

1791

ANON. Valuable Secrets in Arts and Trades; or approved Directions from the best Artists for the various Methods of Engraving. *London:* (Baker) 12mo. [68

1793

SCHWEGMAN, H. Het overbrengen von een tekening op een koperenplat. *Harlem:* 8vo. [69

1794

GÜTLE, J. C. Die Kunst nach Zeichnungsmanier in Kupfer zu stechen, Kupfer zu drucken und Formen zu schneiden. Mit vielen andern, in diese Wissenschaften einschlagenden Künsten. Nebst Gautier des Nimes Kunst, zu tuschen. Mit Kupfern. *Nürnberg:* 8vo. [70

(SPILSBURY, F.) The Art of Etching and Aquatinting, strictly laid down by the most approved masters, sufficiently enabling Amateurs in Drawing to transmit their works to posterity . . . . with a specimen of Landscape and Profile, by F. Yrubslips. *London:* 12mo. [71

ANON. The Artists Assistant. . . . The Sixth Edition improved. *Philadelphia:* 12mo. [Illustrations: *see the edit. of* 1801.] [72

1795

GÜTLE, J. C. Kunst in Kupfer zu stechen, zu Radieren und zu Aezen, in schwarzer Kunst und punktirter Manier zu arbeiten. Ehemals durch Abraham Bosse etwas davon herausgegeben, jetzo aber ganz neu bearbeitet und mit den neuesten Erfindungen der heutigen Künstler beschrieben, zur Belehrung für angehende Künstler und Liebhaber. Mit Vignetten und XIX Kupfern. *Nürnberg.* [73

SCHELLENBERG, ROD. Kurze Abhandlung über die Aetzkunst. *Winterthur:* 8vo. [74

1796

DOSSIE, ROBERT. The Handmaid to the Arts. (3rd edit.) *London:* 12mo. [75

MILIZIA, FRANCESCO. Delle incisione delle stampe . . . . corretto, ed arricchito di notizie. *Bassano:* 8vo. [76

Digitized by Google

1797

J. F. A. C. Anweisung für Anfänger im Kupferstechen. *Altenburg:* 8vo. [77

1798

MILIZIA, FR. Della incisione delle stampe. *Bassano:* 8vo. [78

1799

ANON. The Artist's Assistant. The sixth (*sic !*) edition improved. *London:* 8vo. [Illustrations.] [79

1800

SCHAD, T. v. Praktisches Handbuch für Zeichner, Kupferstecher, Illuministen, Kupferdrucker und Kunstliebhaber. Gesammelt und herausge geben von Fr. Theod. von Schad. Mit Dürers Portrait als Titelvignette. *Augsburg:* 8vo. [80

C. 1800

ANON. Die Radier- und Aetzkunst für Anfänger. *Halle:* s.a. 8vo. [81

1803

HODSON, THOMAS. The Cabinet of the Arts; or, a Complete System of Drawing, Etching, Engraving, Painting, Perspective, and Surveying. *London:* 1803-6, 4to. [82

ANON. The complete Aquatinter; being the whole Process of Etching and Engraving in Aquatinta; the use of Aquafortis; with all the tools necessary. *London:* 4to. [83

1801

ANON. The Artist's Assistant, or School of Science; Forming a Practical Introduction to the Polite Arts; In Painting, Drawing, Designing, Perspective, Engraving, Colouring, etc. With ample directions for Japanning, Enamelling, Gilding, Silvering, Lacquering, etc., and a valuable Selection of Miscellaneous secrets. Illustrated with Plates. *Birmingham (and London):* 8vo. (*All the other 'Artist's Assistants' are extracts of this book.*) [84

1804

MEYNIER, JOHANN HEINRICH. Anleitung zur Aetzkunst besonders in Crayon und Tuschmanier nach eigenen praktischen Erfahrungen, herausgegeben von Johann Heinrich Meynier . . . . Mit 11 Kupfertafeln. *Hof:* 8vo. [85

1805

SCHWARZ, P. W. Neue und gründliche Art, die Aquatinta oder Tuschmanier . . . . zu erlernen . . . . Mit 7 Kupfern. *Nürnberg:* 8vo. [86

1806

SCHWEGMANN, H. Verhandeling over het Graveren in de Manier van gewasschen Tekeningen of Aquatinta; op twee verschillende Wyzen: door H. Schwegmann, Kunstschilder. *Haarlem:* 8vo. [87

Digitized by Google

1807

LANDSEER, JOHN. Lectures on the Art of Engraving, delivered at the Royal Institution of Great Britain. . . . *London:* 8vo. (*Some account of processes in Chap. III.*) [88

1808

ORME, EDW. An essay on transparent prints and on transparency in general. *Eng. and Fr. London:* fol. [Illustrations.] [89

1811

HASSELL, JOHN, Chalcographia, or the Art of imitating Chalk, black-lead, pencil and pen and ink drawings, by J. Hassell. *London:* 4to. [Illustrations.] [90

——— Improvement in the Aquatinta Process, by which Pen, Pencil and Chalk Drawings can be imitated. (Separately printed from Nicholson's Journal, xxx. p. 220.) *London:* 4to. [91

1813

ANON. The Artist's Assistant. . . . *London:* 12mo. [Illustrations.] [92

BANKES, HENRY. Lithography, or the Art of making drawings on stone for the purpose of being multiplied by printing. *London:* 8vo. [93

1814

ANON. The Artist's Assistant. . . . *Gainsborough:* 12mo. [Illustrations.] [94

1815

KELLER, KARL URBAN. Neue bisher noch ganz unbekannte Art den Tusch in Kupfer nachzuahmen . . . . *Stuttgart:* 8vo. [Illustrations.] [95

1816

[BANKES, HENRY.] Lithography, or the art of taking impressions from Drawings and Writing made on Stone. With Specimens of the Art. Second Edition. With considerable Additions. *London:* 8vo. [Illustrations.] [96

1817

BAGELAAR, E. W. J. Verhandeling over eene nieuwe manier om Prentteekenningen te vervaardigen, de omtrekken te drukken met Roest, Schryfink, Potlood enz. en de gewassche Tinten met Roet of in Water opgelosten Oostindischen Ink. En om uit inlandsche voortbrengselen Druckzwart te bereiden. *Haarlem:* 8vo. [97

1818

SENEFELDER, ALOYS. Vollständiges Lehrbuch der Steindruckerei. *München:* 4to. [Illustrations.] [98

(MAIRET.) Notice sur la lithographie, ou l'Art d'imprimer sur pierre. *Dijon:* 12mo. [Illustrations.] [99

Digitized by Google

1819

SENEFELDER, ALOYS. A complete course of Lithography: containing clear and explicit Instructions in all the different branches and manners of that art: accompanied by illustrative specimens of Drawings. To which is prefixed a history of Lithography, from its origin to the present time. By Alois Senefelder, inventor of the art of Lithography and chemical printing. With a preface by Frederic von Schlichtegroll. Translated from the original German, by A. S. *London:* 4to. [100

——— L'Art de la Lithographie ou instruction pratique . . . . précédée d'une histoire de la Lithographie et de ses divers progrès. *Paris:* 4to [101

——— [Another edition. With Folio Supplement of 20 lithographs and a portrait of Author.] *Paris:* 4to. [102

RAUCOURT. Mémoire sur les expériences lithographiques faites à l'École royale des ponts et chaussées de France, ou Manuel théorique et pratique du dessinateur et de l'imprimeur lithographes. *Toulon:* 8vo. [Illustrations.] [103

1820

(RAUCOURT.) A Manual of Lithography. . . . Translated from the French. By C. Hullmandel. *London:* 8vo. [Illustrations.] [104

1821

BARTSCH, ADAM VON. Anleitung zur Kupferstichkunde von Adam von Bartsch . . . Mit 11 Kupfertafeln. Erster-Zweiter Band. *Wien:* 8vo. [The first vol. explains technical process, the second gives an account of deceptive copies and states.] [105

CRAIG, W. M. A Course of Lectures on Drawing, Painting, and Engraving, considered as branches of elegant education. Delivered in the saloon of the Royal Institution. . . . *London:* 8vo. [pp. x, 452. *Chapter VI. contains some explanations of process.* Illustrations.] [106

ANON. Manuel des amateurs d'estampes, contenant: 1°. . . . 2°. . . . 3° notice sur les différentes manières de graver, usitées jusqu'à ce jour. *Paris:* 12mo. [107

ANON. A Concise Account of Lithography; or the Art of Printing from Stone, with suitable directions. *London:* 8vo. [108

1822

ENGELMANN, GODEFROI. Manuel du Dessinateur Lithographe, ou description des meilleurs moyens à employer pour faire des desseins sur pierre. *Paris:* 8vo. [109

SAVAGE, WM. Practical Hints on decorative Printing, with Illustrations engraved on wood, and printed in colours at the type press. *London:* 4to. [Illustrations.] [110

Digitized by Google

EBERHARD, HEINRICH W. Die Anwendung des Zinks statt der Stein und Kupferplatten zu den vertieften Zeichnungsarten. Nebst einer Anweisung Metallabgüsse von erhaben- und tiefgeätzten Steinzeichnungen zu machen. *Darmstadt:* 8vo. [111

1823

—— —— Praktischer Unterricht in Steindruck. *Darmstadt:* 8vo. [112

1824

SENEFELDER, ALOYS. Behandlungsart des Ueberdrucks auf den kleinen lithographischen Handpressen. Vom Erfinder der Lithographie, Aloys Senefelder. *München:* 8vo. [113

HASSELL, JOHN. Graphic Delineation. A practical treatise on the Art of Etching, or manner of copying pictures and drawings, by a method at once scientific, tasteful, and amusing. . . . Illustrated with plates in progress . . . . from original works of Claude Lorraine, Rembrandt, etc. *London:* 4to. [114

SENEFELDER, ALOYS. Italian translation of his 'Vollständiges Lehrbuch,' with 2 plates. *Napoli:* 8vo. [115

ENGELMANN, GODEFROI. Manuel du Dessinateur Lithographe, ou description des meilleurs moyens à employer pour faire des dessins sur pierre. *Paris:* 8vo. (2nd edit.) [116

HULLMANDEL, C. The art of drawing on stone, *etc.* *London:* 8vo. [Illustrations.] [117

ANON. Lithographic Pencil Drawing, or Instructions for imitating Aquatinta on Stone, by a pupil of Mr. Senefelder, the Inventor of Lithography. *London:* 4to. [118

1825

PARTINGTON, C. F. The Engraver's Complete Guide, comprising the theory and practice of Engraving, with its modern improvements, in steel plates, lithography, *etc.* *London:* 8vo. [119

HOUBLOUD. Théorie lithographique, ou Manière facile d'apprendre à imprimer soi-même, contenant 6 planches représentant 11 sujets. *Paris:* 8vo. [120

(RAUCOURT.) Manual of Lithography. . . . Translated by Ch. Hullmandel. (*2nd edit. about* 1825.) *London:* 8vo. [121

1826

HASSELL, J. Practical treatise on the Art of Etching, or Manner of Copying Pictures and Drawings. *London:* 4to. [Illustrations.] [122

ANON. The Artist's Assistant. . . . The thirteenth edition improved. *London:* 12mo. [Illustrations.] [123

1827

BRÉGEAUT, L. R. Manuel théorique et pratique du dessinateur et de l'imprimeur lithographe, orné de 10 lithographies. *Paris:* 12mo. [124

Digitized by Google

BRÉGEAUT, L. R. The same. IIe éd., revue, corrigée, augmentée et ornée de 12 lithographies. *Paris*: 18mo. [125

HULLMANDEL, CH. With the Author's Compliments. On some important Improvements in Lithographic Printing. *London:* 8vo. [Illustrations.] [126

1828

DUCHESNE, AÎNÉ. De la gravure sur métal et sur bois et de ses divers procédés. *Paris:* 8vo. *Separately printed from Courtin's 'Encyclopédie Moderne.'* [127

1829

(BRÉGEAUT, L. R.) [German translation of the 'Manuel.'] *Ulm:* 8vo. [128

PESCHEK, H. ED. Das Ganze des Steindrucks von seiner artistischen, chemischen und mechanischen Seite dargestellt. *Weimar:* 8vo. (*Vol. 43 of 'Neuer Schauplatz der Künste und Handwerke.'*) [129

1830

PERROT, A. M. Manuel du graveur, ou Traité complet de la gravure en tous genres, d'après les renseignements fournis par plusieurs artistes. *Paris:* 8vo. (One of the Roret 'Manuels.') [130

DUNST, J. M. Praktisches Lehrbuch der Lithographie und Steindruckkunst, nach den neuesten und eignen Erfahrungen herausgegeben, mit den nöthigen Zeichnungen, Alphabeten und Musterblättern begleitet. *Cöln:* 8vo. [131

ENGELMANN, G. Manuel . . . . (3rd edit.) *Paris:* 8vo. [132

1831

THON, C. G. Lehrbuch der Kupferstecherkunst, die Kunst in Stahl zu stechen und in Holz zu schneiden. Mit 8 Abbildungen. *Ilmenau:* 8vo. [133

1832

(RAUCOURT.) A Manual of Lithography. . . . Third edition corrected. To which is added (now for the first time printed) Selections from the Work of M. Brégeaut; forming a Sequel to the Manual, and bringing down the improvements in the art to the present time. Translated from the French by C. Hullmandel. . . . *London:* 8vo. [134

1833

BREVIÈRE, H. De la Xilographie ou gravure sur bois. *Rouen:* 8vo. [135

HULLMANDEL, CH. The art of drawing on stone. . . . 2nd edit. *London:* 8vo. [136

1834

HENRICI, M. Die Kupferstechkunst und der Stahlstich. Für Männer vom Fach und Kunstfreunde von Moritz Henrici. *Leipzig:* 8vo. [137

Digitized by Google

SENEFELDER, ALOYS. Lehrbuch der Steindruckerei, *etc.* (New edit.) *München.* [138

BRÉGEAUT, L. R. Manuel complet, théorique et pratique, du dessinateur et de l'imprimeur lithographe. (3rd edit.) *Paris:* 18mo. [Illustrations.] [139

ENGELMANN, G. Handbuch für Steinzeichner und Beschreibung der besten Mittel um in allen bekannten Manieren auf Stein zu zeichnen. *Berlin:* 8vo. [140

1835

DEMBOUR, A. Description d'un nouveau procédé de gravure en relief sur cuivre . . . . inventé par A. Dembour. *Metz:* 4to. [Illustrations.] [141

——— Die Metall-Ektypographie. Aus dem Französischen von Heinrich Meyer. *Braunschweig:* 4to. [142

HULLMANDEL, CH. The Art of Drawing on Stone, *etc.* 3rd edit. *London:* 8vo. [143

LAWSHER, F. C. Die lithographische Hochätzkunst. s.l. 8vo. [144

1836

DELESCHAMPS, PIERRE. Des mordants, des vernis et des planches dans l'art du graveur, ou Traité complet de la gravure. *Paris:* 8vo. [145

DUNST, J. M. Praktisches Lehrbuch der Lithographie. *Bonn:* 8vo. [146

DESPRÉAUX. Note détaillée sur l'invention de la gravure en relief, *etc.* *Paris:* 4to. [147

KARMARSCH, K. Beschreibung einer Relief-Maschine zur getreuen bildlichen Darstellung von Münzen, Medaillen und anderen Reliefs, auf ganz mechanischem Wege. Mit 2 Kupfertafeln und 8 Probetafeln in Stahlstich. *Hannover:* 8vo. [148

1837

BARTH, C. Die Kupferstecherei, oder die Kunst in Kupfer zu ätzen. 1er theoretischer Theil, von Longhi aus dem Italienischen übersetzt von C. Barth; 2er praktischer Theil, von C. Barth. *Hildburghausen:* 8vo. [149

BERTHIAUD. Nouveau manuel complet de l'imprimeur en taille-douce, par M. Berthiaud, rédigé par M. Boitard, enrichi de notes et d'un appendice renfermant tous les nouveaux procédés, les découvertes, méthodes et inventions nouvelles appliquées ou applicables à cet art, par MM. Finot, Pointet, Rémond et autres imprimeurs de la capitale. Ouvrage orné de planches. *Paris:* 8vo. (one of Roret's 'Manuels.') [150

ENGELMANN, G. Société Industrielle de Mulhausen. Rapport sur la Chromolithographie. Nouveau procédé produisant des lithographies coloriées, de l'invention de M. G. Engelmann. Lu dans la séance du 29 mars 1837. *Mulhouse:* 8vo. [151

Digitized by Google

1838

SCHMIDT, C. H. Vollständiges Handbuch der Gravirkunst, enth. gründl. Belehrung über die Aetzwässer, die Aetzgründe, die Platten und die Gravirmaschinen. Für Kupfer- und Stahlstecher, Lithographen etc. Von P. Deleschamps. Deutsch bearbeitet und mit Zusätzen vers. von C. H. Schmidt, mit 8 Steinstichtafeln. *Quedlinburg:* 8vo. [152

CHORLEY, H. F. The Authors of England. A series of Medallion Portraits of modern literary characters, engraved from the works of British Artists by Achille Collas. With illustrating notices by Henry F. Chorley. (Appended, Memorial of facts connected with the history of metallic engraving and the process of M. Collas.) *London:* 4to. [153

CHEVALLIER, J. B. A., and LANGLUMÉ. Traité complet de la Lithographie, ou Manuel du Lithographe, avec des notes de MM. Mantoux et Joumar. *Paris:* 8vo. [154

1839

JACKSON, JOHN, and CHATTO, W. A. A treatise on wood-engraving, historical and practical. With upwards of three hundred illustrations engraved on wood, by John Jackson. *London:* 8vo. [155

BRÉGEAUT, L. R. Manuel théorique et pratique . . . . lithographe. Nouvelle éd. (4th edit.) *Paris:* 18mo. [Illustrations.] [156

BALLERSTEDT, G. Beschreibung der Art und Weise, den lithographischen Buntdruck mittelst eines Steins mit einem Abdruck zu bewirken. Erste Manier: Schablonen-Druck; Zweite Manier: Iris-Druck. *Quedlinburg (and Leipzig?):* 8vo. [157

ENGELMANN, G. Traité théorique et pratique de lithographie. *Mülhouse et Paris:* 4to. [158

BEHREND, DR. Bericht über die den lithographischen Stein ersetzenden, in mehreren Ländern patentirten künstlichen lithographischen Platten, und deren Handhabung. (Erfindung von Dr. Behrend, *etc.*) *Berlin:* 8vo. [159

1840

NETTO, F. A. W. Die Kunst in Metall zu graviren, oder Anweisung auf Kupfer, Stahl, Eisen, Zink und andere Metalle zu zeichnen, zu radiren, zu ätzen, zu stechen und dann das Entworfene mechanisch oder chemisch abzudrucken. Mit 3 Tafeln Abbildungen. *Quedlinburg:* 8vo. [160

ANON. Ektypographie, oder die Kunst, Zeichnungen auf Kupferplatten hoch zu ätzen. *Quedlinburg:* 8vo. [161

ENGELMANN, GODEFROI. Traité de Lithographie. (Edited, with preface, by A. Penot. Plates.) *Mulhouse:* 4to. [162

——— Das Gesammtgebiet der Lithographie . . . . Übersetzung des Traité théor. et prat. de Lithographie, par G. Engelmann . . . . bearbeitet . . . . von W. Pabst . . . . und A. Kretzschmar . . . *Chemnitz:* 4to. Plates. [163

NETTO, F. A. W. Das Geheimniss des Oelbilder-Drucks, erfunden vom

Digitized by Google

Maler Liepman in Berlin und nach eigenen Versuchen und Erfahrungen mitgetheilt. Nebst 1 Abbildung. *Quedlinburg*: 8vo. [164

EBERHARD, HEINRICH W. Lithographischer Mosaik-Farbendruck von einem einzigen Stein für das Colorit aller Steinabdrücke. *Leipzig:* 8vo. [165

ANON. Allgemein fassliche Beschreibung des Verfahrens zur Herstellung galvanischer Kupferstiche und zur Darstellung von Copien gravirter Kupferplatten, *etc. Leipzig:* 12mo. [166

——— Die Galvanoplastik . . . . Nach dem Russischen Original von M. H. Jacobi. Mit 1 Kupfertafel. *St. Petersburg:* 8vo. [167

NETTO, F. A. W. Die Glasdruckkunst oder Hyalotypie, durch welche, ohne Abnutzung der Formen, Millionen Abdrücke von Zeichnungen, einfärbigen Gemälden und Schriften aller Art . . . . angefertigt werden können. *Quedlinburg:* 8vo. [168

GIRARDET, Charles. Notice sur l'origine et les progrès de la gravure en relief sur pierre. *Paris:* 4to. [Illustrations.] [169

1841

FIELDING, T. H. The art of engraving, with the various modes of operation under the following different divisions: etching, soft-ground etching, line engraving, chalk and stipple, aquatint, mezzotint, lithography, wood engraving, medallic engraving, electrography, and photography. Illustrated with specimens of the different styles of engraving. *London:* 8vo. [170

NICHOL, W. Treatise on Lithographic Printing. (Sep. printed from the 7th edit. of the Encyclopedia Britannica). *Edinburgh:* 8vo. [171

SCHÖNBERG, L. Metallic Engraving in Relief, for Letterpress Printing, being a greatly improved substitute for wood engraving, called aerography, by the inventor Louis Schönberg. *London:* 8vo. [172

SMEE, ALFRED. Elements of Electro-Metallurgy, *etc. London:* 8vo. [173

PALMER, EDWARD. Electrotype Illustrations, intended as an accompaniment to Smee's Elements of Electro-Metallurgy, or the art of working in metals by the galvanic fluid, more particularly as illustrative of its application to the various styles of engraving, etc. *London:* 4to. [Illustrations.] [174

ZANTEDESCHI, FRANCESCO. Della elettrotipia. *Venezia:* 4to. [Illustrations.] [175

NETTO, F. A. W. Anwejsung zur Galvanoplastik. *Quedlinburg:* 8vo. [Illustrations.] [176

1842

LIEPMANN, J. Der Olgemälde-Druck, erfunden und beschrieben von J. Liepmann. Mit 6 Kupfertafeln. *Berlin:* 4to. (An obsolete method of printing chromos from fluid oils.) [177

SÜSSMANN, J. Galvanoplastik, Proben kupferner Polytypen, durch Galvanoplastik erzeugt vom Kupferstecher J. Süssmann in Berlin. *Berlin:* 4to. [Illustrations.] [178

Digitized by Google

KOBELL, F. VON. Die Galvanographie, eine Methode, gemalte Tuschbilder durch galvanische Kupferplatten im Drucken zu vervielfältigen. *München:* 4to. [179

1843

BERGMANN, LEO. Das Ganze des Steindrucks. Nebst einem Anhang von der Zinkographie. Mit Zugrundelegung der 1. Auflage des bekannten Peschek'schen Werkes, nach den jetzigen Bedürfnissen ganz neu bearbeitet. 2te völlig umgearbeitete Auflage. *Weimar:* 8vo. (Vol. 43 of *Neuer Schauplatz d. Künste und Handwerke:* 1st edit. *See* Peschek, 1829.) [180

ENGELMANN, G. Das Gesammtgebiet der Lithographie, *etc. Leipzig*, 4to. (2nd edit.) [181

PALMER, E. Glyphography, or engraved drawing, for printing at the type press after the manner of woodcuts. Palmer's patent. *London:* 12mo. [182

WALKER, CH. Die Galvanoplastik für Künstler, Gewerbtreibende und Freunde der Numismatik. Von Ch. Walker. Bearbeitet von Ch. H. Schmidt. *Weimar:* 8vo. (Vol. 123 of *Neuer Schauplatz der Künste und Handwerke.*) [183

SMEE, ALFRED. Elements of Electro Metallurgy, *etc.* (2nd ed.) *London:* 8vo. [184

——— Manuel de Galvanoplastie. (French translation of Smee's work.) *Paris:* 8vo. (One of Roret's 'Manuels.') [185

1844

FIELDING, T. H. The art of engraving, with the various modes of operation, *etc.* Second edition. *London:* 8vo. [Illustrations.] [186

PERROT, A. M. Nouveau Manuel complet du graveur, ou Traité de l'art de la gravure en tout genre, d'après les renseignements fournis par plusieurs artistes, et rédigé par M. Perrot. Nouvelle édition très augmentée par M. F. Malepeyre. *Paris:* 12mo. [Illustrations.] [187

WERNER, F. Die Galvanoplastik in ihrer technischen Anwendung. Mit 12 Kupfertafeln. *St. Petersburg (and Berlin):* 8vo. [188

SMEE, ALFRED. 2nd edit. of French translation of Smee's work on Metallurgy. *Paris:* 8vo. (One of Roret's 'Manuels.') [189

1846

FURCHAU. Beschreibung des Verfahrens zur Anfertigung und Benutzung der elastischen Radierungsplatten von Herrn Furchau . . . . zu Stralsund. *Berlin:* 4to. [*The plates are built up on canvas by about ten coatings of a solution of chalk and linseed oil: when dry they are worked upon with burin or dry point, and may also be treated like lithographic stone.*] [190

PIIL, C. Die Chemitypie, oder die Kunst, eine auf einer Metallplatte in gewöhnlicher Weise ausgeführte Radirung oder Gravirung in einen

Digitized by Google

erhabenen Stempel zu verwandeln, der sich auf der Buchdruckerpresse, wie ein Holzschnitt, im Text oder allein, abdrucken lässt. Erfunden und beschrieben von C. Piil. *Leipzig:* 4to. [191

PIIL, C. Die Buchdruckzeichnung oder Glyphographie. Enthaltend eine Beschreibung dieser neuen Erfindung nebst Anleitung für Künstler. Mit 27 in den Text und 23 apart abgedruckten Glyphographien. *Leipzig:* 8vo. [192

1847

KOBELL, F. VON. Die Galvanographie, eine Methode Tuschbilder und Zeichnungen durch galvanographische Platten im Drucke zu vervielfältigen. 2. vermehrte Auflage. Mit Abbildung des galvanischen Apparats und galvanographischen Proben. *München:* 8vo. [193

WEISHAUPT, HEINRICH. Theoretisch praktische Anleitung zur Chromolithographie, oder zum lithographischen Farbendruck, sowie zum lithographischen Kunstdruck überhaupt . . . . Auf vieljährige Versuche und Erfahrungen bergündet. Mit 3 Tafeln Abbildungen. *Quedlinburg und Leipzig:* 8vo. [194

WENNG, K. HEINRICH. Die Geschichte und Leistungen der neuen Erfindung: Kunstdruck ohne Presse, nebst ihren Zweigen: Spiegelbildzeichnung, Perpectivaufnahme, Farbenauftrag und einer neuen Handzeichnungsmethode für Kunstakademien und Kunstschulen. *München:* 8vo. [195

CHEVREUL, MICHEL EUGÈNE. Considérations sur la reproduction par les procédés de M. Niepce de Saint-Victor des images gravées, dessinées ou imprimées. *Paris:* 8vo. [196

1849

ASHLEY, ALFRED. The Art of Etching on Copper. 14 plates and frontispiece. *London:* 4to. [197

ALKEN, H. The Art and Practice of Etching, with directions for other methods of light and entertaining engraving. *London:* 8vo. [198

ANON. Etching described and simplified, with progressive illustrations. By a practical engraver. *London:* 8vo. [199

[SMEE, ALFRED.] French translation of Smee's Metallurgy. 3rd edit. *Paris:* 8vo. (One of Roret's 'Manuels.') [200

1850

BRÉGEAUT, L. R. Nouveau Manuel complet de l'Imprimeur-Lithographe. Nouvelle édition, très augmentée par M. Knecht et M. Jul. Desportes. Ouvrage orné d'un Atlas renfermant des figures coloriées et autres. 2 Parties. *Paris:* 8vo. (5th edit.) (One of Roret's 'Manuels.') [201

WALKER, CH. Die Galvanoplastik . . . bearbeitet von Ch. H. Schmidt. 2te Auflage (being vol. 123 of 'Neuer Schauplatz der Künste und Handwerke'). *Weimar:* 8vo. [202

1851

ASHLEY, ALFRED. The Art of Etching. . . . Illustrated with 14 Etchings by the Author. *London:* 8vo. (2nd edit.) [203

Digitized by Google

PALMER, E. Glyphography, *etc.* (2nd edit.) *London:* 8vo. [204

SMEE, ALFRED. Elements of Electro-Metallurgy. . . . Third edition . . . enlarged. With electrotypes . . . and woodcuts. With an Appendix. *London:* 12mo. [205

——— Elemente der Electro-Metallurgie von Alfred Smee, Deutsch bearbeitet nach der dritten vermehrten und verbesserten englischen Original-Ausgabe. Mit vielen in den Text gedruckten Holzschnitten. *Leipzig:* 8vo. [206

1853

KRAUSS, FR. & F. MALTÉ. Handbuch für Lithographen und Steindrucker. *Stuttgart:* 8vo. [Illustrations.] [207

SALIÈRES, PAUL NARCISSE. Gravure diaphane. Nouveau procédé à la portée de tous les peintres et de tous les dessinateurs. *Montpellier:* 4to. [208

AUER, ALOYS. Der polygraphische Apparat, oder die verschiedenen Kunstfächer der k.k. Hof- und Staatsdruckerei zu Wien. *Wien:* 8vo. (With quarto Atlas.) [209

1854

DONLEVY, JOHN. The Rise and Progress of the Graphic Arts, including notices of illumination, wood-engraving, lithography, chromography and intagliography, elucidating the new art of Chromoglyphotype, invented by John Donlevy. *New York:* 4to. [210

NIEPCE DE SAINT-VICTOR. Mémoire sur la gravure héliographique sur acier et sur verre. *Batignolles:* 8vo. [211

[SMEE, ALFRED.] French translation of Smee's Metallurgy. (4th edit.) *Paris:* 18mo. (One of Roret's 'Manuels.') [212

AUER, ALOIS. Die Entdeckung des Naturselbstdrucks. *Wien:* [Illustrations.] [213

——— The Discovery of the Natural Printing Process: an Invention for Creating by Means of the Original itself, in a swift and simple manner, Plates for printing Copies of Plants, Materials, etc., without the Aid of Drawing or Engraving. By Louis [*i.e.* Alois] Auer, of Vienna. With Plates. *London:* 8vo. [214

1855

ROUGET, J. M. Populäre Anleitung zur Xylographie oder Holzschneidekunst, sowie zur Modellstecherei. Nebst Anweisung zur Erlernung des Zeichnens. Ein nothwendiges Hülfsbuch für Künstler, Xylographen, Modellstecher, Buchdrucker und Freunde dieser Kunst, . . . Mit vielen Abbildungen. *Ulm:* 8vo. [215

PESCHEK, H. E. Das Ganze des Steindrucks. . . . Nebst einem Anhange von der Zinkographie und dem anastat. Druck. Bearbeitet von Leo Bergmann. Mit 85 Abbildungen. 3te bedeutend vermehrte Auflage. *Weimar:* 8vo. (Vol. 43 of 'Neuer Schauplatz der Künste und Handwerke,' 2nd edit.; *see* Bergmann, 1843.) [216

ANON. Exposition universelle de 1855 à Paris. Explication des ouvrages de Lithographie. *Paris:* 12mo. [217

Digitized by Google

AUER, ALOIS. L'appareil polygraphique, ou les différentes branches artistiques de l'imprimerie impériale-royale de Vienne. *Wien:* 8vo. [218

——— Die Entdeckung des Naturselbstdrucks. (2nd edit.?) *Wien:* fol. [219

HASPER, WILHELM. Galvanoplastik. Gründliche Einleitung für Buchdrucker, Schriftgiesser, Kupferstecher und Holzschneider, auf die einfachste und billigste Art Typen und Kupferplatten darzustellen. *Carlsruhe:* 8vo. [220

BEHR. Chalcotypie. Nouveau genre de gravure en relief. *Paris:* 4to. (Sept. 1st.) [221

WIESENER. Mémoires sur un nouveau procédé de gravure . . . . déposé au secrétariat de l'Académie des sciences, le 20 août 1849 et le 12 mars 1852. *Paris:* 4to. [222

1856

ARESTI, JOSEPH. Lithographia; or Aquatinta stippled gradations produced upon drawings washed or painted on stone. *London:* 8vo. [223

DEVINCENZI, JOSEPH. Électrographie, ou nouvel art de graver en relief sur métal . . . Mémoire de l'auteur présenté à l'Académie des sciences de l'Institut. *Paris:* 4to. [224

NIEPCE DE SAINT-VICTOR. Traité pratique de la Gravure héliographique sur acier et sur verre. . . . Avec le portrait de l'auteur gravé par ce procédé. *Paris:* 4to. [225

MARTIN, A. Repertorium der Galvanoplastik und der Galvanostegie. 2 vols. *Wien.* [226

JOMARD. Rapport fait à la Société d'encouragement . . . . sur les machines à graver en taille-douce. *Paris:* 4to. [Illustrations.] (n.d. but about 1856.) [227

1857

HAMMANN, HERMAN. Des arts graphiques destinés à multiplier par l'impression, considérés sous le double point de vue historique et pratique. *Genève:* 8vo. [228

1858

LANGALERIE, CHARLES DE. Notice sur l'art de nieller. *Orléans:* 8vo. [Illustrations.] [229

1859

SMEE, ALFRED. Nouveau manuel complet de galvanoplastie, . . . augmenté d'un grand nombre de notes d'après MM. Jacoby, Spencer, Elsner, Becquerel, de Kobell, de la Rive, Elkington, de Ruolz, etc. Ouvrage publié par E. de Valicourt et orné de figures. Nouvelle édition, traduite sur la 3e édition de l'original anglais. . . . *Paris:* 18mo. One of Roret's 'Manuels.' [230

1861

JACKSON, JOHN. A Treatise on Wood Engraving, historical and practical, with upwards of three hundred Illustrations engraved on Wood by John Jackson. The historical portion by W. A. Chatto. Second

Digitized by Google

Edition, with a new Chapter on the Artists of the present day, by Henry G. Bohn, and 145 additional Engravings. *London:* 4to. [231

LINTON, WILLIAM JAMES. Specimens of a new process of Engraving for Surface printing. (With explanations.) *London:* 8vo. [232

1862

SCOTT, ALEX. DE COURCY. On Photo-Zincography and other photographic processes employed at the Ordnance Survey Office, Southampton. By A. de C. Scott, under the direction of Sir H. James. *London:* 4to. [233

1863

HERING. Anleitung zur Holzschneidekunst. [234

BOLLMANN, F. Das photographische Kohlebild. Eine einfache und praktische Anleitung zur billigen Darstellung desselben, nebst einer ausführlichen Anweisung diese Bilder durch ein einfaches Verfahren auf Stein oder Zink für den Druck zu übertragen. *Berlin:* 8vo. [235

SCOTT, A. DE C. On Photo-Zincography . . . 2nd edit. *London:* 4to. [236

1864

MARTIAL, A. P. Lettre sur les éléments de la gravure à l'eau forte Paris. [237

1865

PERROT, A. M. Nouveau manuel complet du graveur, ou Traité de l'art de la gravure en tout genre, d'après les renseignements fournis par plusieurs artistes. Nouvelle édition, mise au courant de la science et augmentée de tous les nouveaux procédés mécaniques et chimiques relatifs à la gravure, par M. F. Malepeyre. *Paris:* 18mo. (One of Roret's 'Manuels.') [238

WEISHAUPT, HEINR. Das Gesammtgebiet des Steindrucks . . . nebst einem Anhange von der Zinkographie . . . 4. Aufl. von 'Peschek, Das ganze des Steindrucks' in gänzlicher Umarbeitung. *Weimar:* 8vo. (Being vol. 43 of 'Neuer Schauplatz der Künste und Handwerke;' the third ed. by Peschek, 1855). [239

1866

SCHASLER, M. Die Schule der Holzschneidekunst. Geschichte, Technik und Aesthetik der Holzschneidekunst . . . Mit erläuternden Illustrationen. *Leipzig:* 12mo. [240

BLANC, CHARLES. Traité de la gravure à l'eau-forte. *Paris:* 8vo. [241

LALANNE, MAXIME. Traité de la gravure à l'eau-forte. *Paris:* 8vo. [242

1867

GILKS, THOMAS. The Art of Wood-engraving. A practical Handbook. With numerous illustrations by the author. (2nd edit.) *London:* 8vo. [243

Digitized by Google

KNECHT, M. Nouveau Manuel complet du Dessinateur et de l'Imprimeur lithographe, et augmenté de plusieurs procédés nouveaux concernant la Lithographie mécanique, la Chromo-Lithographie, la Litho-Photographie, la Zincographie, et traitant des papiers de sûreté. *Paris:* 12mo. (With Atlas.) [244

NEUBÜRGER, FERDINAND. Der Farbendruck auf der Steindruckpresse. Chromolithographie. *Berlin:* 8vo. [Illustrations.] [245

KRESS, GEORG L. v. Die Galvanoplastik für industrielle und künstlerische Zwecke. *Frankfurt a/M.* [Illustrations.] [246

VOGEL, H. Der Pigmentdruck nach Swan's Methode. *Berlin:* 8vo. [247

1868

FULLER, S. E. Manual of Instruction in Wood Engraving. *Boston:* 16mo. [Illustrations.] [248

HAMERTON, P. G. Etching and Etchers. *London:* 8vo. [249

1869

ISERMANN, A. Anleitung zur Chemitypie. *Leipzig:* 32mo. [250

1870

GEYMET AND ALKER. Gravure héliographique. Galvanoplastie. Traité pratique. *Paris et Bruxelles:* 12mo. [251

STADELE, SIMON. Jederman sein eigner Autograph und Drucker. *München:* 8vo. [Illustrations.] [252

HERING, A. Die Galvanoplastik und ihre Anwendung in der Buchdruckerkunst. *Leipzig:* 8vo. [253

1871

HAMERTON, P. G. The Etcher's Handbook. *London:* 8vo. [Illustrations.] [254

MOTTEROZ, C. Essai sur les Gravures chimiques en relief. *Paris:* [Illustrations.] [255

STADELE, S. Ausführliche Anleitung zum Autographiren auf Zinkplatten mittels Farbwalze. *München:* 8vo. [256

1872

LEBER, C. Histoire de la gravure . . . suivie des procédés employés pour graver et pour nettoyer les estampes. *Orléans:* 4to. [257

STADELE, SIMON. Das Ganze des Zinkdrucks . . . Nebst einem Anhang von dem anastatischen Drucke und der Selbstverfertigung sämmtlicher autographische Bedürfnisse. 2te bedeutend verm. Auflage. [1st ed. same year?] *München:* 8vo. [258

SCAMONI, GEORG. Handbuch der Heliographie, nebst praktischem Wegweiser im Gebiete der bezüglichen Gravirkunst, Metall-Aetzung und Vergoldung, Galvanoplastik, Photosculptur etc. Von Georg Scamoni aus Würzburg . . . *St. Petersburg (and Berlin):* 8vo. [Illustrations.] [259

Digitized by Google

ANON. The Heliotype Process described and illustrated. *London:* 4to. [Illustrations.] [260

1873

MARTIAL, A. R. Nouveau traité de la gravure à l'eau-forte pour les peintres et les dessinateurs. *Paris:* 8vo. [Illustrations.] [261

GEYMET, THÉOPHILE. Photolithographie; traits et demi-teintes. Traité pratique. *Paris:* 12mo. [262

1874

WILLSHIRE, WM. H. An introduction to the study and collection of ancient prints. *London:* 8vo. (Chap. III. 'On the various processes or kinds of engraving.') [263

MOOCK, L. Traité pratique complet d'impression photographique aux encres grasses. *Paris:* 12mo. [264

1875

HAMERTON, P. G. The Etcher's Handbook, *etc.* Second Edition. *London:* 8vo. [265

WEISHAUPT, HEINRICH. Das Gesammtgebiet des Steindrucks, nebst einem Anhange von der Zinkographie, dem anastatischen Druck und der Photolithographie. (5th edit.) *Weimar:* [Illustrations.] (Being vol. 43 of 'Neuer Schauplatz der Künste und Handwerke.') [266

VOGEL, H. Das photographische Pigment-Verfahren oder der Kohledruck, nach seinen neuesten Vervollkommnungen dargestellt von Professor Dr. H. Vogel und J. R. Sawyer. *Berlin (and London):* 8vo. [267

1876

WESSELEY, J. E. Anleitung zur Kenntniss und zum Sammeln der Werke des Kunstdruckes von J. E. Wessely. *Leipzig:* 8vo. [268

HAMERTON, P. G. Etching and Etchers. (2nd edit.) *London:* 8vo. [Illustrations.] [269

EDWARDS, ERNEST. The Heliotype Process, by Ernest Edwards. With twenty-eight illustrations. *Boston:* 4to. [270

1877

DOYEN, CAMILLO. Trattato di Litografia Storico, Teorico, Pratico ed Economico. *Torino:* 8vo. [271

HUSNIK, J. Das Gesammtgebiet des Lichtdrucks, nebst einer .... Anleitung zur Ausübung der Photolithographie, Emailphotographie, Chemigraphie (Zinkographie) .... *Wien:* 8vo. [Illustrations.] [272

SCHERER, RUDOLF. Lehrbuch der Chemigraphie und verwandten Fächer. *Wien:* 8vo. [Illustrations.] [273

1878

LALANNE, MAXIME. Traité de la gravure à l'eau-forte. *Paris:* 8vo. (2nd edit.) [274

Digitized by Google

RICHMOND, W. D. (See 1879.) [275
PERWOLF, EMANUEL. Die Farbendruckerzeugung mittels Chromolitho- und Chromozinkographie. *Wien:* 8vo. [276
WEISS, JULIUS. Die Galvanoplastik. *Wien:* [Plates.] [277
HUSNIK, J. Die Heliographie, oder Anleitung zur Herstellung druckbarer Metallplatten aller Art, etc., ferner die neuesten Fortschritte im Pigmentdruck und Woodbury-Verfahren. . . . *Wien:* 8vo. [Illustrations.] [278
KRÜGER, JULIUS. Die Zinkogravure oder das Aetzen in Zink zur Herstellung von Druckplatten aller Art, nebst Anleitung zum Aetzen in Kupfer, Messing, Stahl und anderen Metallen . . . *Wien:* 8vo. [279
HEIDENHAUS, E. Lichthochdruck (Photo-Typographie). Proben eines neuen Verfahrens zur Herstellung von Illustrationen für Buchdruck mittels Lichtwirkung. s.l. fol. [280
GEYMET, THÉOPH. Traité pratique de gravure héliographique et de galvanoplastie. [Second edition. n.d. but about 1878.] [281

1879

FULLER, S. E. Instruction in the Art of Engraving. *New York:* 12mo. [282
LINTON, W. J. Some practical hints on Wood-Engraving, for the instruction of reviewers and the public. *Boston and New York:* 8vo. [283
VIDAL, LÉON. Cours de Reproductions industrielles. Exposé des principaux procédés de reproductions graphiques, héliographiques, plastiques, hélioplastiques et galvanoplastiques. *Paris:* 8vo. [Illustrations.] [284
RICHMOND, W. D. The Grammar of Lithography. *London:* 8vo. [285
KÜNZEL, H. Die Zurichtung und der Druck von Illustrationen. *Leipzig:* [Illustrations.] [286
SCHNAUSS, JUL. Der Lichtdruck und die Photolithographie. . . . *Düsseldorf:* 8vo. [287
STADELE, SIMON. Das Unübertrefflichste des Zinkdruckes. Lehrbüchlein . . . mit Beschreibung aller Apparate und Präparate des Zinkdruckes. 2te Auflage. *München:* 8vo. [Illustrations.] [The first edition was printed privately.] [288

1880

MABERLY, J. The Print Collector. . . . With an Appendix containing Fielding's Treatise on the Practice of Engraving. Edited, with Notes, an Account of contemporary etching and etchers, and a Bibliography of Engraving, by Robert Hoe, jr. *New York:* 8vo. [Illustrations.] [289
LALANNE, M. A Treatise on Etching. Text and Plates by Maxime Lalanne. Authorised American edition, translated from the second French edition by S. R. Koehler. *Boston:* 8vo. [290
RICHMOND, W. D. The Grammar of Lithography, a practical guide for the artist and printer in commercial and artistic lithography and chromolithography, zincography, photo-lithography, and lithographic machine

Digitized by Google

printing. By W. D. Richmond. Edited and revised, with an introduction, by the Editor of 'The Printing Times and Lithographer.' Second edition. *London:* 8vo. [291

RICHMOND, W. D. Grammatik der Lithographie. Ein praktischer Leitfaden für Lithographen und Steindrucker in Geschäfts- und Kunst-Lithographie, Chromolithographie, Zinkographie, Photolithographie und lithographischem Maschinendruck. Von W. D. Richmond. Mit einen Vorwort des Herausgebers der 'Printing Times and Lithographer.' Deutsche autorisirte Ausgabe, übertragen von Carl August Franke. *Leipzig:* 8vo. [Illustrations.] [292

HUSNIK, J. Das Gesammtgebiet des Lichtdrucks . . . 2e vermehrte Auflage. *Wien:* 8vo. [Illustrations.] [293

SCHNAUSS, JUL. Der Lichtdruck und die Photolithographie . . . 2e durchgesehene und vermehrte Auflage. *Düsseldorf:* 8vo. [Illustrations.] [294

VOLKMER, OTTOMAR. Die Technik der Reproduction von Militärkarten und Plänen des k.k. militärgeographischen Institutes zu Wien. *Wien:* 8vo. [Illustrations.] [295

C. 1880.

GEYMET, THÉOPH. Traité pratique de photolithographie, *etc.* [2nd edit.] [296

1881

EMERSON. Handbook of Wood-engraving. *London:* [297

HAMERTON, P. G. The Etcher's Handbook . . . Giving an Account of the old Processes, and of Processes recently discovered. Illustrated by the Author. Third edition, revised and augmented. *London and Boston:* 12mo. [298

RICHMOND, W. D. Grammar of Lithography, *etc.* (3rd edit.) *London:* 8vo. (n.d. but about 1881.) [299

NOBLE, FRED. The Principles and Practice of Colour Printing stated and explained. *London:* 8vo. [Illustrations.] [300

WALDOW, ALEX., etc. Illustrirte Encyklopädie der graphischen Künste . . . *Leipzig:* 8vo. (1881–4.) [Illustrations.] (*Probably includes some of the works which were also published separately by their respective authors, and have been thus entered: for example, the German edition of Richmond's Grammar of Lithography?*) [301

ALLGEYER, JULIUS. Handbuch über das Lichtdruckverfahren. Für Praktiker und gebildete Laien. *Leipzig:* 8vo. [302

STADELE, SIMON. Die Autographie sonst und jetzt oder Lehrbüchlein . . . des Zinkdruckes. *München:* 12mo. [303

——— Das Ganze des Zinkdruckes . . . 3e mit vielen Neuerungen bedeutend vermehrte Auflage. *München:* 8vo. [Illustrations.] [304

1882

LOSTALOT, A. DE. Les Procédés de la Gravure. *Paris:* 8vo. [305

Digitized by Google

SAJKEVIČ. A Russian translation of the first edition of Wessely's 'Anleitung.' *Moscow.* [306
VIDAL, LÉON. Cours des Reproductions Industrielles. (2nd edit.) [307
NOWAK, E. Praktische Anleitung die Kunst des Zink-Hochätzens schnell und sicher zu erlernen. *Wien (?):* 8vo. [Illustrations.] [308
STADELE, SIMON. Das Ganze des Zinkdruckes. (4th edit.) *München:* 8vo. [Illustrations.] [309

1883

ROBERTSON, H. R. The Art of Etching. *London:* 8vo. [310
C. v. LÜTZOW, W. HECHT, L. JACOBY, W. UNGER, ETC. Illustrirter Katalog der ersten internationalen Spezial-Ausstellung der Graphischen Künste in Wien. *Wien:* 8vo. [Illustrations.] [311
HEICHEN, PAUL. Deutsches polygraphisches Kompendium. Encyclopädisches Hand- und Lehrbuch. *Leipzig:* 8vo. (1883-4.) [Illustrations.] [312
TOIFEL, WILHELM F. Handbuch der Chemigraphie, Hochätzung in Zink für Buchdruck etc. *Wien:* [Illustrations.] [313
GEYMET. Traité pratique de phototypie. *Paris:* 12mo. [314
RICHMOND, W. D. Grammar of Lithography. [Fourth edition.] *London:* 8vo. (n.d. but about 1883.) [315

1884

LINTON, W. J. Wood-engraving, a Manual of instruction. *London:* 8vo. [316
META, OSCAR. Der Steindrucker an der Schnellpresse, nebst einer Abhandlung über die Farben in der Chromolithographie. 8vo. [317
PETTIT, JAMES. Modern Reproductive Graphic Processes, by James S. Pettit, First Lieutenant, First United States Infantry. *New York:* 8vo. (76 of Van Nostrand's Science Series.) [318
KRÜGER, JULIUS. Die Zinkogravure oder das Aetzen in Zink zur Herstellung von Druckplatten aller Art, nebst Anleitung zum Aetzen in Kupfer, Messing, Stahl u. a. Metallen. Auf Grund eigener, praktischer, vieljähriger Erfahrungen bearbeitet und herausgegeben von Julius Krüger. Zweite gänzlich umgearbeitete und erheblich vermehrte Auflage. *Wien, Pest, und Leipzig:* 12mo. [319

1885

KOEHLER, S. R. Etching, an outline of its technical processes, etc. . . . 30 plates by old and modern etchers, etc. *New York and London:* 4to. [320
RICHMOND, W. D. Colour and Colour-printing as applied to Lithography. *London:* 8vo. [321
——— Grammar of Lithography. [Fifth edition.] *London:* 8vo. (n.d. but about 1885.) [322
HUSNIK, J. Die Reproduktions-Photographie sowohl für Halbton- als Strichmanier. *Wien:* [Illustrations.] [323

Digitized by Google

VOLKMER, OTTOMAR. Die Technik der Reproduktion von Militärkarten und Plänen, nebst ihrer Vervielfältigung . . . *Wien:* 8vo. [Illustrations.] [324

SCHERER, RUD. Neueste graphische Verfahren. *Wien.* [325

HUSNIK, J. Das Gesammtgebiet des Lichtdrucks. Die Emailphotographie, etc. Dritte, sehr vermehrte und besonders für den Schnellpressendruck umgearbeitete Auflage. *Wien:* 8vo. [Illustrations.] [326

BÖCK, JOSEPH. Die Zinkographie in der Buchdruckerkunst. . . . (Separately printed from Waldow's 'Encyklopädie.') *Leipzig:* 8vo. [327

GEYMET, THÉOPHILE. Traité pratique de gravure héliographique et de galvanoplastie, 3e édition. *Paris:* 12mo. [328

1886

DELABORDE, H. Engraving. . . . Translated by R. A. M. Stevenson. With an additional chapter on English Engraving by William Walker. *London:* 8vo. [Illustrations. *Matters of Process are only sparingly explained.*] [329

WESSELY, J. E. Anleitung zur Kenntniss und zum Sammeln der Werke des Kunstdruckes. Zweite durchgesehene und vermehrte Auflage. Mit elf Facsimile-Tafeln. *Leipzig:* 8vo. [330

RICHMOND, W. D. The Grammar of Lithography. 6th edit. *London:* 8vo. [331

GEYMET, T. Traité pratique de photogravure sur zinc et sur cuivre. *Paris:* 12mo. [332

——— Traité pratique de gravure et impression sur zinc par les procédés héliographiques. 2 vols. *Paris:* 12mo. [333

STADELE, SIMON. Das neueste und Ganze des Zinkdruckes . . . nebst einem Anhang über Mittheilung einer gründlichen Belehrung zur Ausführung des anastatischen, typographischen und photographischen Lichtdruckes. . . . *München:* 8vo. [Illustrations.] [334

MÖRCH, J. O. Handbuch der Chemigraphie und Photochemigraphie. *Düsseldorf:* 8vo. [Illustrations.] [335

SCHNAUSS, DR. JULIUS. Der Lichtdruck und die Photolithographie. Dritte Auflage. *Düsseldorf:* 8vo. [Illustrations.] [336

WILKINSON, W. T. Photo-Engraving on Zinc and Copper, in Line and Half-tone, and Photolithography. *London.* [337

LANGBEIN, DR. GEORG. Vollständiges Handbuch der Galvanischen Metall-Niederschläge (Galvanostegie und Galvanoplastik). *Leipzig:* 8vo. [Illustrations.] [338

HUSNIK, J. Die Zinkätzung (Chemigraphie, Zinkotypie). . . *Wien:* 8vo. [Illustrations.] [339

LESLIE, ALEXANDER F. W. Practical Instructor of Photo-engraving and Zinc-etching Processes. By Alex. F. W. Leslie. Comprising a full explanation of drawing, photography, wash-out, swelled-gelatine, and zinc-etching processes. *New York:* 8vo. [Illustrations.] [340

Digitized by Google

1887

DELATRE, AUGUSTE. Eau-Forte, Pointe sèche et Vernis-mou, par Auguste Delatre. Préface de Castagnary. Lettre de Félicien Rops. Gravures inédites par F. Rops, H. Somm, A. Point et Delatre. *Paris:* 4to. [341

SCHMÄDEL, JOSEF RITTER VON. Ueber moderne Graphik. *München:* [Illustrations.] [342

GEYMET, T. Traité pratique de gravure sur verre par les procédés héliographiques. *Paris:* 12mo. [343

——— Traité pratique de gravure et impression sur zinc par les procédés héliographiques. *Paris:* 12mo. [344

BURBANK, REV. W. H. Photographic Printing Methods: a Practical Guide to the Professional and Amateur Worker. *New York:* 8vo. [345

STADELE, SIMON. Das Neueste und Ganze des Zinkdruckes . . . 2. vermehrte und verbesserte Auflage. *München:* 8vo. [Illustrations.] [346

MAIHAK, A. Die Vervielfältigung von Zeichnungen, insbesondere von technischen Zeichnungen. s.l. 8vo. [Illustrations.] [347

ALTISHOFFER. Les Procédés: Traité pratique de Phototypie, Impression aux encres crasses. Report sur bois, Photolithographie, Photozinkographie, Photogravure. *Paris.* [348

WOOD. Modern methods of illustrating books. *New York.* [349

JACOBI, CHARLES T. The Printer's Handbook. . . . *London:* 8vo. [350

1888

ROLLER, PROF. J. Technik der Radierung. Eine Anleitung zum Radieren und Aetzen auf Kupfer. *Wien:* 8vo. [351

SHORT, FRANK. On the making of etchings. *London:* sm. 4to. [Illustrations.] [352

GEYMET, T. Traité pratique de Phototypie. *Paris:* 12mo. (2nd edit.) [353

——— Traité pratique de photolithographie. 3e édition, entièrement refondue et augmentée. *Paris:* 12mo. [354

——— Traité pratique de gravure en demi-teinte par l'intervention exclusive du cliché photographique. *Paris:* 12mo. [355

WILKINSON. Photo-engraving. *New York.* [356

VOLKMER, OTTOMAR. Betrieb der Galvanoplastik mit dynamoelektrischen Maschinen zu Zwecken der graphischen Künste. *Wien:* 8vo. [Illustrations.] [357

HUSNIK. Die Heliographie . . . 2e vollständig neu bearbeitete Auflage. *Wien:* 8vo. [Illustrations.] [358

MOOCK. Traité pratique d'Impression photographique aux encres grasses, de Phototypographie et de Photogravure. Troisième édition, entièrement refondue par Geymet. *Paris.* [359

SCHNAUSS, JUL. Die Photomechanischen Druckverfahren und ihre Fortschritte. (Separately printed from 'Leopoldina.') *Halle:* 4to. [360

LESLIE, ALEXANDER. Second edition of his 'Practical Instructor of Photo-engraving and Zinc-etching Processes. . . (Revised).' *New York:* 8vo. [361

Digitized by Google

1889

LANGBEIN, DR. GEORG. Vollständiges Handbuch der galvanischen Metall-Niederschläge . . . 2nd edit. *Leipsig:* 8vo. [Illustrations.] [362
LIETZE, E. Modern heliographic processes, reproductive Drawings, etc. *New York:* 8vo. [363
GROSSE, EDUARD. Der Gold- und Farbendruck auf Calico, Leder, Leinwand, Papier . . . . *Wien.* [Illustrations.] [364
FERRET, L'ABBÉ J. La photogravure facile et à bon marché. *Paris.* [365
SCHNAUSS, DR. JULIUS. Der Lichtdruck und die Photolithographie. Vierte Auflage. *Düsseldorf:* 8vo. [Illustrations.] [366

1890

RHEAD, G. W. Darton's Manuals for home work: Etching, by G. Woolliscroft Rhead . . . . With Illustrations by the Author. *London:* 12mo. [367
DONOP, L. v. Ausstellung der Radierungen von Bernhard Mannfeld in der kgl. National-Galerie. Erläutert von Prof. Dr. Lionel von Donop. *Berlin:* 8vo. (Plates: Ch. 3, *Die Technik der Radirkunst*, pp. 25–36.) [368
DAY, JOHN B., and SON. How a Picture is reproduced Fac-simile in Colour of the Original, by means of Chromo-Lithography. (*With 22 Plates.*) *London:* fol. (*n.d., but about* 1890?). [369
WILKINSON, W. T. Photogravure, with illustrations by W. L. Colls. *London:* 12mo. [370
——— Photo-Engraving, Photo-Litho, Collotype, and Photogravure. . . . (4th edit.) *London:* 8vo. [371

1891

LANGBEIN, DR. GEORG. A complete treatise on . . . . Galvanoplastic Operations . . . . Translated from the German . . . . With additions by William T. Brannt. Illustrated with 125 engravings. *New York:* 8vo. [372
JACOBI, CHARLES T. The Printer's Handbook of Trade Recipes, Hints and Suggestions Relating to Letter Press and Lithographic Printing, . . . Engravings, etc. . . . Second edition, enlarged and classified. *London:* 8vo. [373
MÖRCH, J. O. Die Autotypie in ihren verschiedenen Ausführungsorten. *Düsseldorf:* 8vo. [Illustrations.] [374

1892

HAMERTON, P. G. Drawing and Engraving, a brief Exposition of Technical Principles and Practice. *London:* 8vo. [Illustrations.] [375
HERKOMER, H. Etching and Mezzotint Engraving. Lectures delivered at Oxford, by Hubert Herkomer. *London:* sm. fol. [Illustrations.] [376

Digitized by Google

EARHART, JOHN F. The Color Printer: A treatise on the use of colours in typographic printing. *Cincinnati.* [377

EDER, JOSEF MARIA. Recepte und Tabellen für Photographie und Reproductionstechnik . . . . (2te Auflage?) *Halle:* 8vo. [378

DUCHOCHOIS, P. C. Photographic reproduction processes. Edited with additional matter by E. J. Watt. *London:* 8vo. (This is probably a translation of a French book, which I have not been able to find.) [379

SCHNAUSS, DR. JULIUS. Der Lichtdruck und die Photolithographie. Fünfte Auflage. *Düsseldorf:* 8vo. [Illustrations.] [380

KRÜGER, JULIUS. Die Zinkogravure . . . . Mit 11 Abbildungen und 7 Tafeln. 3te gänzlich umgearbeitete und erheblich vermehrte Auflage. *Wien:* 8vo. [381

WILKINSON, W. T. Photo-mechanical Processes. A practical guide to Photo-zincography, photo-lithography, and collotype. *London:* 8vo. [382

SCHRAUBSTAEDTER, JR., CARL. Photo-engraving: a practical treatise on the production of printing blocks by modern photographic methods. *St. Louis:* 8vo. [Illustrations.] [383

KOEHLER, S. R. The photo-mechanical processes. *New York:* 8vo. [384

——— Museum of Fine Arts, Print Department: Exhibition illustrating the technical methods of the reproductive arts from the xv. century to the present time, with especial reference to the Photo-mechanical Processes. *Boston:* 12mo. [*Although only a catalogue, perhaps one of the best publications on the subject for the non-professional.*] [385

1893

FARQUHAR, H. D. The Grammar of Photo-engraving. Containing instruction in drawing, chemistry, and optics, as applied to photo-engraving. *New York:* 8vo. [386

1894

[KOEPPING, J. KARL.] Kunst-Ausstellung von Graphischen Werken der jetzt lebenden Mitglieder im Akademie-Gebäude. *Berlin:* 12mo. (pp. 3–18 processes.) [387

SEEMANN, THEODOR. Lehrbuch der vervielfältigenden Künste im Umriss. Kurze geschichtliche Entwickelung und Technik. *Dresden (?):* 8vo. [Illustrations.] [388

ADELINE, JULES. Les Arts de Reproduction vulgarisés. Avec planches hors texte et vignettes. *Paris.* [389

TOKUNO, T. Japanese Wood-cutting and Woodcut Printing. (A Report of the Smithsonian Institution, edited and annotated by S. R. Koehler.) *Washington:* 8vo. [Illustrations.] [390

EDER, DR. J. M. Recepte und Tabellen für Photographie und Reproduktionstechnik. (3rd ed.) *Halle:* 8vo. [391

Digitized by Google

FRITZ, GEORG. Die Photolithographie. *Halle:* 8vo. [Illustrations.] [392
HUSNIK, J. Das Gesamtgebiet des Lichtdrucks, die Emailphotographie *etc.* Vierte Auflage. *Wien:* 8vo. [Illustrations.] [393
VOLKMER, OTTOMAR. Die Photo-Galvanographie zur Herstellung von Kupferdruck und Buchdruckplatten. *Halle.* [Illustrations.] [394
WILKINSON, W. T. Photo-engraving, Photolitho, Collotype, and Photogravure. (5th ed.) *London:* 8vo. [395
LAINER, ALEX. Anleitung zur Photoxylographie. *Halle:* 8vo. [Illustrations.] [396
STADELE, SIMON. Das Neueste und Ganze des Zinkdrucks . . . 3te sehr vermehrte Auflage. *München:* 8vo. [Illustrations.] [397

1895

PATON, HUGH. Etching, Drypoint, Mezzotint. The whole art of the Painter-Etcher. A practical treatise by Hugh Paton. *London:* 8vo. [Illustrations.] [398
GRAUL, DR. RICHARD. Führer durch die 61. Sonder-Ausstellung-Verfahren des Kunstdrucks, Mai-Juni 1895, im Lichthofe des Kunstgewerbe-Museums. *Berlin:* 12mo. [399
SINGER, H. W. Geschichte des Kupferstichs. *Magdeburg und Leipzig:* 8vo. [Illustrated: *all processes of intaglio-engraving are explained.*] [400
WEISHAUPT, HEINRICH. Das Gesammtgebiet des Steindrucks . . . Nebst einem Anhange von der Zinkographie . . . 6e verbesserte und vermehrte Auflage, neu bearbeitet von Theodor Reineck. Nebst einem Atlas von 11 Foliotafeln. *Weimar:* 8vo [Illustrations.] [401
WILKINSON, W. T. Photogravure. Second edition. Rewritten to date. *London:* 8vo. [402
FARQUHAR, H. D. The Grammar of Photo-Engraving. . . . With additional matter on the fish glue enamel process . . . . and . . . . appendix on the making of half-tone negatives, translated from the German by . . J. M. Eder, *etc.* *London:* 8vo. [403
BOUCHOT, HENRI. La lithographie. *Paris:* 8vo. (The last chapter explains technical processes.) [404
GOEBEL. Die graphischen Künste der Gegenwart. *Stuttgart:* 4to. [Illustrations.] [405
CRONENBERG, W. Die Autotypie auf amerikanischer Basis. *Düsseldorf:* 8vo. [Illustrations.] [406
LANGBEIN, DR. GEORG. Vollständiges Handbuch der galvanischen Metall-Niederschläge . . . (3rd ed.) *Leipzig:* 8vo. [Illustrations.] [407
HUSNIK, P. C. J. Die Reproduktions-Photographie . . . 2e Aufl. *Wien:* 8vo. [408

1896

HESSE, FRIEDRICH. Die Chromolithographie mit besonderer Berücksichtigung der modernen auf photographischer Grundlage basirenden Verfahren. s.l. 8vo. [Illustrations.] [409

Digitized by Google

EDER, DR. JOS. MARIA. Das Pigmentverfahren und die Heliogravure. *Halle:* 8vo. [410

HUSNIK, JACOB. Die Zinkätzung . . . . . 2te Auflage. *Wien:* 8vo. [Illustrations.] [411

ZANDER, C. G. Photo-Trichromatic Printing, in Theory and Practice. *Leicester:* 4to. pp. 48. [412

BABIN DE GRANDMAISON. Résumé de l'histoire et des procédés de la gravure. *Paris:* 8vo. [413

VERFASSER, JULIUS. The Half-tone Process . . . . *Bradford:* 8vo. [Illustrations: 2nd edition.] [414

ALPHABETICAL LIST OF AUTHORS

ADELINE, 389
Alken, 198
Alker, 251
Allgeyer, 302
Altishoffer, 348
Aresti, 223
Argues, 10
Ashley, 197, 203
Auer, 209, 213, 214, 218, 219

BABIN de Grandmaison, 413
Bagelaar, 97
Baldinucci, 40
Ballerstedt, 157
Bankes, 94, 96
Barth, 149
Bartsch, 105, 149
Bate, 6–8, 13
Behr, 221
Behrend, 159
Bergmann, 180, 216
Berthiaud, 150
Blanc, 241
Böck, 327
Böckler, 12, 16, 19, 39, 50
Bohn, 231
Boitard, 150
Bollmann, 235
Bonnet, 57
Booth, 67
Bosse, 9, 11, 12, 15, 16, 19, 29, 37, 39, 46, 50, 54, 73
Bouchot, 404
Brannt, 372
Brégeaut, 124, 125, 128, 134, 139, 156, 201
Brevière, 135
Browne, 21, 22
Burbank, 345
Bylaert, 60–62

C., I. F. A., 77
Castagnary, 341
Chatto, 155, 231
Chevallier, 154
Chevreul, 196
Chorley, 153
Cochin, 37
Collas, 153
Courtin, 127
Craig, 106
Cronenberg, 406

DARTON, 367
Day, 369
Delaborde, 329
Delatre, 344
Deleschamps, 145, 152
Dembour, 141, 142
Desportes, 201
Despreaux, 147
Devincenzi, 224
Donlevy, 210
Donop, 368
Dossie, 47, 52, 75
Doyen, 271
Duchesne, 127
Duchochois, 379
Dunst, 131, 146

EARHART, 377
Eberhard, 111, 112, 165
Eder, 378, 391, 403, 410
Edwards, 270
Emerson, 297
Engelmann, 109, 116, 132, 140, 151, 158, 162, 163, 181

FAITHORNE, 14, 40
Farquhar, 386, 403
Ferret, 365
Fielding, 170, 186, 289
François, 49
Franke, 292
Fritz, 392
Fuller, 248, 282
Funck, 36, 42
Furchau, 190

GAUTIER, 41, 45
Gautier de Montdorge, 44, 56

Digitized by Google

Geymet, 251, 262, 281, 296, 314, 328, 332, 333, 343, 344, 353–355, 359
Gilks, 243
Girardet, 169
Goebel, 405
Graul, 399
Grosse, 364
Gütle, 70, 73

HAMERTON, 249, 254, 265, 269, 298, 375
Hamman, 228
Harrepeter, 65
Hasper, 220
Hassell, 90, 114, 122
Hauckwitz, 34
Hecht, 311
Heichen, 312
Heidenhaus, 280
Henrici, 137
Hering, 234, 253
Herkomer, 376
Hesse, 409
Hodson, 82
Hoe, 289
Houbloud, 120
Hullmandel, 104, 117, 126, 134, 136, 143
Husnik, 272, 278, 293, 323, 326, 339, 358, 393, 408, 411

ISERMANN, 250
Islip, 4

JACKSON, John, 155, 231
Jackson, John B., 43
Jacobi, C. T., 350, 373
Jacobi, H., 167
Jacoby, L., 311
James, 233
Jomard, 227

KARMARSCH, 148
Keller, 92
Kerraux, 60, 61
Knecht, 201, 244
Kobell, 179, 193
Koehler, 290, 320, 384, 385, 390
Köpping, 387
Krauss, 207
Kress, 246
Kretzschmar, 163
Krüger, 279, 319, 381
Künzel, 286

LAINER, 396
Lalanne, 242, 274, 290
Landseer, 88
Langalerie, 229
Langbein, 362, 372, 407
Langlumé, 154
Lawsher, 144
Leber, 257
Le Blon, 31–33, 35, 44
Le Conte, 40
Leprince, 64
Leslie, 340, 361
Liepmann, 164, 177
Lietze, 363
Linton, 232, 283, 316
Longhi, 149
Lostalot, 305
Luce, 59
Lützow, 311

M., L., 1–3, 5
Maberly, 289
Maihak, 347
Mairet, 99
Malespeyre, 187, 238
Malté, 207
Martial, 237, 261
Martin, 226
Meta, 317
Meyer, 142
Meynier, 85
Milizia, 76, 78
Moock, 264, 359
Mörch, 335, 374
Motteroz, 255

NETTO, 160, 164, 168–176
Neubürger, 245
Nichol, 171
Niepce de St. Victor, 211, 225
Nitzsche, 54
Noble, 300
Nowak, 308

ORME, 89

P. W., 4
Pabst, 163
Palmer, 174, 182, 204
Papillon, 55
Partington, 119
Paton, 398
Penot, 162
Pernety, 53
Perrot, 130, 187, 238
Perwolf, 276
Peschek, 129, 180, 216, 239
Pettit, 318
Piil, 191
Point, 341
Pounsonbie, 1
Purfoote, 1

RAUCOURT, 103, 104, 121, 134
Reineck, 401
Rhead, 367
Richmond, 275, 285, 291, 292, 299, 301, 315, 321, 322, 331
Robertson, 310
Roller, 351
Rops, 341
Rouget, 215
Rueda, 51

S., A., 100
Sajkevič, 306
Salières, 208

Digitized by Google

Salmon, 17, 18, 20, 23–28, 30
Savage, 110
Sawyer, 267
Scamoni, 259
Schad, 80
Schasler, 240
Schellenberg, 74
Scherer, 273, 325
Schlichtegroll, 100
Schmädel, 342
Schmidt, 152, 183, 202
Schnauss, 287, 294, 336, 360, 366, 380
Schönberg, 172
Schraubstaedter, 383
Schwarz, 86
Schwegmann, 69, 87
Scott, 233, 236
Seemann, 388
Senefelder, 98, 100–102, 113, 115, 138
Short, 352
Singer, 400
Smee, 173, 184, 185, 189, 200, 205, 206, 230
Somm, 341
Spilsbury, 71
Stadele, 252, 256, 258, 288, 303, 304, 309, 334, 346, 397
Stapart, 63, 65
Stevenson, 329
Süssmann, 178

THON, 133
Tischbein, 66
Toifel, 313
Tokuno, 390

UNGER, 311

VALICOURT, 230
Van Nostrand, 318
Verfasser, 414
Vidal, 284, 307
Vogel, 247, 267
Volkmer, 295, 324, 357, 394

WALDOW, 301, 327
Walker, Ch., 183, 202
Walker, Wm., 329
Watt, 379
Weishaupt, 194, 239, 266, 401
Weiss, 277
Wenng, 195
Werner, 188
Wessely, 268, 306, 330
Wiesener, 222
Wilkinson, 337, 356, 370, 371, 382, 395, 402
Willshire, 264
Wood, 349

ZANDER, 412
Zantedeschi, 1

Digitized by Google

Digitized by Google

INDEX

ÆSTHETICS, a matter of knowledge, 140
Albert, 176
Allegri, 53
Ammann, 19
Aqua-tint, 91; Leprince's method, 92; Stapart's method, 92; fluid aqua-tint ground, 93; sandpaper aqua-tint, 93; Keller's and other methods, 95
Art, theories of, compared, 142
Aspruck, 98, 107
Autotyping, *s.* half-tone process

BANG, 106
Bartolozzi, 54, 101, 104, 115
Beham, 5, 47
Bellini, 1, 143, 152
Bewick, 22
Biting a plate, 66; a photogravure plate, 184
Black-and-White, Lack of appreciation of, 2; needs explanation, 3; is looked at blindly, 3; is as high as any other art, 5; illustrates manners and customs best, 5; excites our fancy to intellectual creation, 155; its suggestiveness, 155; has its own laws, 156
Boissieu, 99
Bondone, 148, 149
Bonnet, 100
Book illustrations, woodcuts, 25; engravings, 63; photo-mechanical, 164, 166, 170
Books of Hours, 21
Bosse, 136
Brussels print room, 11
Buonarotti, 1, 143, 146, 151
Burin, 28; the pull burin, 62
Burke, 104
Burr, 79
Bylaert, 101, 103

CALLOT, 5, 70, 73
Campagnola, 54, 101
Carracci, 50
Caylus, 77
Chalk, lithographic, 123
Character of line engraving, of etching, woodcuts, etc., compared, 135; of surface methods compared, 136, 137
Charlet, 129
Chevallier, 129
Chodowiecki, 77
Chromo-lithography, 126
Collas, 166
Collotyping, 178; its failings, 179
Colour-printing, 112; ordinary intaglio plates, printed in colours, 113; Seghers, 113; one-plate printing, 114; many-plate printing, 115; three-colour printing, 117;

Digitized by Google

invented by Leblon, 117; improved by d'Agoty, 119; colour-printing on stone, 126, 130; three-colour printing in half-tone, 175; in collotype, 180
Copper-plates, 26
Cornelius, 143
Corrections of relief blocks, 11; of intaglio plates, 29; of aqua-tint plates, 94; of lithographs, 123; of heliogravures, 182
Correggio, *s.* Allegri
Cort, 50
Cradle, mezzotinter's, 84; modern tools, 85
Crayon method, on copper, 96; on stone, 123

D'AGOTY, *s.* Gautier
Debucourt, 115, 116
Decorative art theory criticised, 146
Delacroix, 129
Delatre, 109
Delaune, 54, 101
Demarteau, 98, 100
Dickinson, 87
Distinction between different kinds of prints, 132; outward signs, 133; different kinds of intaglio prints, 134; true method of distinction consists in analysing the character of a print, 135
Dotted burin engravings, 54, 101, 105
Dotted prints, so-called, 21
Drevet, 51
Dry-point, 79; early stage, 80; used by Dürer, 81; by Rembrandt, 81; in our days, 81
Dürer, 5, 14, 16, 17, 18, 19, 25, 38, 39, 41, 43, 44, 49, 50, 69, 81, 101, 151, 156
Dyck, Van, 5, 77

EARLOM, 88, 89
Echoppe, 96
Edelink, 51, 76
Engraving, *s.* Line engraving
Engravings as book illustrations, 63
Etchers, different, compared, 76, 161
Etching, 65; origin of, 69; oldest specimen, 69; early stage, etchings on iron, 69; suggestiveness, 70; tonality and stopping out, 70; working in the bath, 72; return to the simpler process, 74; *e.* the art of line, 74; *e.* with pen and ink, 74; *e.* with a brush, 74; *e.* compared with engraving, 75; used for forwarding, 76; *e.* the art of personality, 76; different etchers compared, 76, 161; Rembrandt's style, 78; soft-ground *e.* 108; *e.* a stone, 121; *e.* the true medium of line, 160; *e.* admits of most freedom and variety, 161
Evelyn, 87
Everdingen, 99

FANTIN-LATOUR, 129
Filters in three-colour process, 176
Fish glue enamel process, 172
Fisher, 89
Flaxman, 56
Flindt, 106
François, 97, 100

GAILLARD, 61
Gainsborough, 89
Gallait, 156
Galvanography, 165
Gautier d'Agoty, 119
Gavarni, *s.* Chevallier
Gelée, 5, 73, 146
Gheyn, de, 50
Giotto, *s.* Bondone
Goltzius, 40, 50
Goya, 5, 94, 99, 162
Goyen, 94, 148
Graf, 69
Graver, 28

Digitized by Google

Graver-etching, 60
Ground, 65; liquid and other grounds, 68; dust box aqua-tint ground, 92; same for photogravure, 184
Gruner, 58
Gubitz, 22
Guérard, 99

HADEN, 60
Half-tone process, 171; its failings, 173
Hals, 144
Hamerton, 60
Hammered engravings, 98, 105
Heliogravure, 180; electrical process, 180; etching process, 181; their failings, 182
Helleu, 82
Herkomer, 111, 166
Hirschvogel, 69, 70
Hokusai, 2
Hollar, 77
Houston, 87
How to enjoy art, 152, 162
Howard, 56

IDEALISM in art criticised, 142
Imitation in art, 148, 150, 152, 158, 163
Impressions, poor, 17
Ink, lithographer's, 121
Inking of relief-blocks, 10; of intaglio blocks, 29; of dry prints, 79; of colour-prints, 114, 115, 117; of lithographs, 122
Intaglio processes, artistic, 26; photo-mechanical, 180
Iris plates, 126
Israhel van Meckenem, 38, 44

JACKSON, 20
Janinet, 115, 116
John, 104

KAUFFMANN, 103
Keene, 19
Keller, 95
Kellerthaler, 107
Kilian, 90
Klinger, 61
Kobell, 94, 165
Koepping, 73

LABORDE, Léon de, 87
Lafreri, 119
Laying of blocks, 174
Leblon, 117, 175
Legros, 130
Lepère, 25
Leprince, 92
Line the basis of graphic art, 158
Line-engraving on copper, 26; its origin, 30; earliest specimen, 37; early stage, 33, 37; system of cross-hatching elaborated, 36: development of colour—or texture—style, 49; best period, 51; decline, 51; lozenge-style, 52; Mellan's style, 53; spiral engraving, 54; Morin's style, 54; burin dots, 54; outline engraving, 55; cartoon engraving, 55; steel engraving, 58; modern revival of the art, 60; in France, 61; the pull-burin, 62; rank of line-engraving, 62; engraving on stone, 124
Lithography, 121; crayon work, 123; pen drawing, 123; brush work, 123; engraving, 124; splattering, 124; scraping, 129; invention of *l.* 127; popularity of *l.* 127; comparative easiness of *l.* 128; trade *l.* superseded by photography, 129
Louis XIV., 51
Lunois, 129
Lutma, 108

MACLISE, 58
Manet, 152

Digitized by Google

Mantegna, 5, 36, 37, 148, 151
Marc-Antonio, *s.* Raimondi
Margins, 42 ; wide *m.* in poor taste, 44
Marin, 100
Masson, 5, 51, 76
Master E S, 37, 38, 49
Master of the Amsterdam Cabinet, 80
Master of the Playing Cards, 37, 80
Mattoir, 96
Mazzuoli, 19, 20, 76
Medal-engraving machine, 166
Mellan, 53
Menzel, 129
Méryon, 5, 73
Meyer, 109
Meynier, 98
Mezzotints, 43, 47, 83 ; invention of the art, 84, 87 ; process, 84 ; qualities of *m.* 86 ; earliest specimen, 87 ; development of *m.*, 88 ; best period of *m.* 89; *m.* on the continent, 90 ; later *m.* 90 ; modern *m.* 90 ; popularity of, 103
Michelangelo, *s.* Buonarotti
Millet, 152
Modelling, elaborate, ill-judged in Black-and-White, 163
Monotypes, 110 ; criticised, 157
Mordants, 66
Morin, 53
Müller's Sistine Madonna, 63

NANTEUIL, 5, 51, 53, 76, 101
Naturalism criticised, 144
Needle, etcher's, 66
Negative prints, 106
Nielli, 31 ; later nielli, 32 ; distinctive character of, 33
Nomenclature of photo-mechanical processes, 167

PAINTING, popularity of, 1
Paper, its manufacture, 15 ; modern illustration *p.* 24, 174
Parma, frescoes at, 53
Parmegiano, *s.* Mazzuoli
Pastel-engraving, 100
Pen drawing on copper, 74 ; on stone, 123
Perregrini da Cesena, 38
Personality in art, 149 and *foll.*
Pether, 89
Pfeifer, 104
Photography as applied to the making of printed reproductions, 168
Photogravure, 183 ; pigment and ground process, 183; screen process, 184 ; rank held by *p.* process, 185
Photo-mechanical processes, 164 and *foll.* ; their rank and value, 186
Phototyping, *s.* Collotyping
Physio-psychological art theory criticised, 144
Piloty, 156
Piroli, 56
Planographic process, 121
Platemark, 30
Ploos van Amstel, 119, 120
Point, etcher's, 66
Pollaiuolo, 38
Positive etching process, 68
Posters, 130
Press, platten, 11 ; cylinder, 30 scraper, 122
Printers' signatures, 42
Printing of relief-blocks, 11 ; wears the blocks, 16 ; of intaglio plates, 30 ; of etchings, 67 ; of dry-points, 80 ; colour-printing, 112 ; of lithographs, 122 ; of half-tone blocks, 174; of collotypes, 179
Prints, three different classes of, 7 ; pigment *p.* 183
Proofs, trial, 31 ; in etching, 72
Proportion of engravings to etchings, etc., 105
Province of Black-and-White compared with other art, 154 and *foll.*; of Line, 159 ; of Photo-mechanical processes, 186

Digitized by Google

Publishers, artists originally their own, 41 ; *P.*'s signatures, 41
Punched engravings, 98, 105 ; early ornamental stage, 106; negative engravings, 106 ; the art of Lutma, 108

QUALITY of impression, 16

RAFFAELLE, *s.* Santi
Raffet, 129
Raimondi, 39, 56
Realism criticised, 144
Relief processes, artistic, 9 ; photo-mechanical, 168 and *foll.*
Rembrandt, *s.* v. Rijn
Reni, 76
Restoring prints, 17
Retroussage, 67, 138
Retzsch, 56
Reversing of design, 9, 26
Reynolds, 89
Ribera, 76
Richter, 19
Riedinger, 90
Rijn, van, 5, 43, 77, 78, 81, 144, 146, 151, 161, 162
Robetta, 38
Rocking a plate, 84
Romney, 89
Rops, 109
Rosa, 76
Roulette, 96, 98, 99
Routing machine, 170
Rubens, 151
Rupert, Prince, 87, 88
Ryland, 104, 115

SANDPAPER mezzotints, 93
Santi, 1, 19, 20, 39, 59
Schongauer, 34, 38, 49
Scott, 56
Scraping a plate, 86 ; a stone, 124
Screen, line, 4, 171 ; grain, 173
Seghers, 113
Senefelder, 127
Seydelmann, 63
Siegen, van, 84, 87, 89
Signatures, 37
Silhouetting, 174
Sistine Madonna, 63, 77
Smith, 89
Smoking a ground, 65
Soft-ground etching, 108 ; Tischbein's method, 109
Solenhofen stone, 121
Spencer collection, 11
Splatter work, 124
Stapart, 92
States, 17, 44 ; systematical schedules of, 46
Stauffer, 60, 61
Steelfacing, 59, 61, 80 (note)
Stippling, 101 ; its qualities and popularity, 102 ; as interpreter of Angelica Kauffman's art, 103 ; supposed to originate with Bylaert, 103
Stopping out, 71
Strobel, 107
Substitute processes, 164 ; chemical, 165 ; electrical, 165 ; mechanical, 166 ; photo-mechanical, 166 and *foll.*
Suggestiveness in etching, 70
Sulphur-tints, 95
Surface methods criticised, 158
Surface processes in intaglio-engraving, *s.* Mezzotints, Aqua-tints, Crayon-method, and Stippling

TASTE, not inborn but acquired, 139, 140
Thourneyssen, 59
Three-colour printing, artistic, 117 ; photo-mechanical, 175
Tiepolo, 76
Tischbein, 109
Titian, *s.* Vecelli

Digitized by Google

Transfer paper, 125
Transferring, 9, 27, 66, 125

VAILLANT, 88
Vallotton, 25
Vangelisty, 104
Vecelli, 1, 20, 143
Velasquez, 5, 144
Vernet, 129

WALTNER, 73
Watermarks, 15
Watson, C., 104, 115
Watson, J., 103
Wenzel von Olmütz, 38
West, 156
Whistler, 44, 70, 130, 161
Wohlgemuth, 19
Woodcut, black line, 9; oldest dated specimen, 11; crudeness of early specimens, 12; colouring of same, 19; conventionality of the art, 18; Dürer's style, 18
Woodcut, chiaroscuro, 10; origin of, 19; German and Italian compared, 20
Woodcut, dotted prints, 21
Woodcut, white line, 10; early stage of, 20; development of, 22; modern art of, 23; its advantages those of half-tone, 24; its weakness, 136
Woodcuts as book illustrations, 25
Woodcutter distinct from the draughtsman, 17

ZANETTI, 20
Zincography, 168; its failings, 170

PRINTED BY
SPOTTISWOODE AND CO., NEW-STREET SQUARE
LONDON

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

This book should be returned to the Library on or before the last date stamped below.

A fine is incurred by retaining it beyond the specified time.

Please return promptly.

FINE ARTS LIBRARY

3 2044 034 765 420

DUE DEC 2 '65 FA

DUE FEB 05 '79 FA

CANCELLED

JUL 0 5 1979

FA

MAY 0 3 1990

DUE OCT 15 '90 FA

NOV 28 '83

NOV 12 '94

DUE CANCELLED FA

MAY 0 3 1990

FA 6035.14 B copy

Digitized by Google